

SERVICE MANUAL

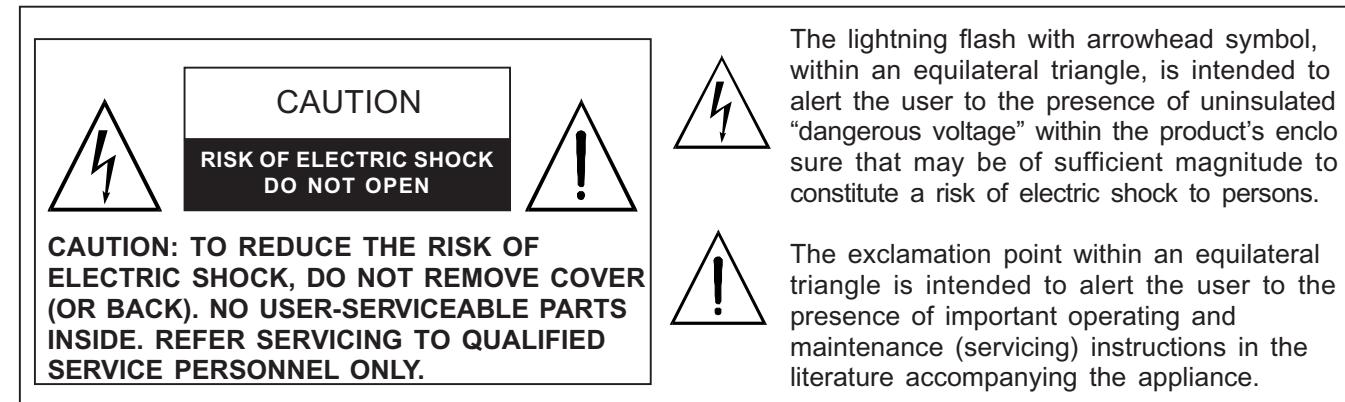
Model:

PDP-5016

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Main IC Specifications
Trouble Shooting Manual of PDP Module
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Software Upgrade

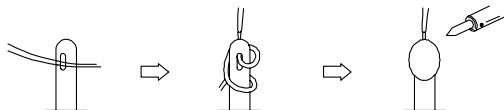
This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

Safety Precaution



PRECAUTIONS DURING SERVICING

1. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, tuner units, antenna selection switches, RF cables, noise-blocking capacitors, noise-blocking filters, etc.
2. Use specified internal Wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
3. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulating Tape
 - 2) PVC tubing
 - 3) Spacers (insulating barriers)
 - 4) Insulating sheets for transistors
 - 5) Plastic screws for fixing micro switches
4. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



5. Make sure that wires do not contact heat generating parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)
6. Check if replaced wires do not contact sharply edged or pointed parts.
7. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol



for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.

Please leave them at an appropriate depot.

WARNING:

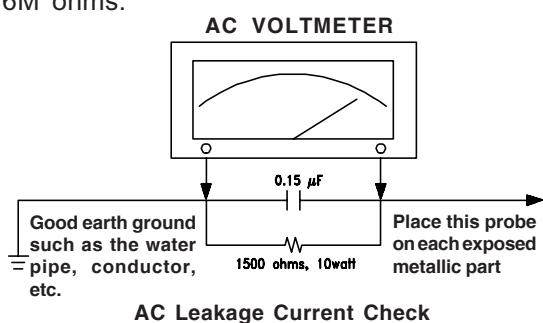
Before servicing this TV receiver, read the SAFETY INSTRUCTION and PRODUCT SAFETY NOTICE.

SAFETY INSTRUCTION

The service should not be attempted by anyone unfamiliar with the necessary instructions on this apparatus. The following are the necessary instructions to be observed before servicing.

1. An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set.
2. Comply with all caution and safety related provided on the back of the cabinet, inside the cabinet, on the chassis or picture tube.
3. To avoid a shock hazard, always discharge the picture tube's anode to the chassis ground before removing the anode cap.
4. Completely discharge the high potential voltage of the picture tube before handling. The picture tube is a vacuum and if broken, the glass will explode.

5. When replacing a MAIN PCB in the cabinet, always be certain that all protective are installed properly such as control knobs, adjustment covers or shields, barriers, isolation resistor networks etc.
6. When servicing is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area.
7. Keep wires away from high voltage or high temperature components.
8. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlay, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly to the AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5K ohms volt sensitivity or more in the following manner. Connect a 1.5K ohm 10 watt resistor paralleled by a 0.15 μ F AC type capacitor, between a good earth ground (water pipe, conductor etc.,) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of the 1.5K ohm resistor and 0.15 μ F capacitor. Reverse the AC plug at the AC outlet and repeat the AC voltage measurements for each exposed metallic part. The measured voltage must not exceed 0.3V RMS. This corresponds to 0.5mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.
9. Must be sure that the ground wire of the AC inlet is connected with the ground of the apparatus properly.



PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this apparatus have special safety-related characteristics.

These characteristics are offer passed unnoticed by visual spection and the protection afforded by them cannot necessarily be obtained by using replacement components rates for a higher voltage, wattage, etc.

The replacement parts which have these special safety characteristics are identified by Δ marks on the schematic diagram and on the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

9. Must be sure that the ground wire of the AC inlet is connected with the ground of the apparatus properly.

Technical Specifications		MODEL : <u>PDP-5016</u>		
50" Plasma Display				
DATE FIRST ISSUED	ISSUE 1	RAISED BY	CHECKED BY	NUMBER OF PAGES 9

REVISIONS

ISSUED	DATE	DESCRIPTION	RAISED BY :

SPECIFICATION AGREED :	SIGNATURE	DATE
R & D DEPARTMENT
COMMERCIAL DEPARTMENT
PRODUCTION DEPARTMENT
Q/A DEPARTMENT
CUSTOMER

SPECIFICATION APPROVED :	SIGNATURE :	DATE :
.		
NOTE :	Only documents stamped "Controlled Document" to be used for manufacture of production parts.	

Technical Specifications	PDP-5016	CONTINUATION PAGE NUMBER <u>2</u> OF <u>9</u> PAGES
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1. Standard Test Conditions

All tests shall be performed under the following conditions, unless otherwise specified.

- 1.1 Ambient light : 150ux (When measuring I_B , the ambient luminance $\leq 0.1\text{Cd/m}^2$)
- 1.2 Viewing distance : 50cm in front of PDP
- 1.3 Warm up time : 30 minutes
- 1.4 PDP Panel facing : no restricted
- 1.5 Measuring Equipment : PC, Chroma 2225 signal generator (with Chroma digital additional card) or equivalent, Minolta CA100 photometer
- 1.6 Magnetic field : no restricted
- 1.7 Control settings : Brightness, Contrast, Tint, Color set at Center(50)
- 1.8 Power input : 100~240Vac
- 1.9 Ambient temperature : $20^\circ\text{C} \pm 5^\circ\text{C}$ ($68^\circ\text{F} \pm 9^\circ\text{F}$)
- 1.10 Display mode : 31.5KHz/60Hz (Resolution 1366 x 768)
- 1.11 Other conditions :
 - 1.11.1 With image sticking protection of PDP module, the luminance will descend by time on a same still screen and rapidly go down in 5 minutes. When measuring the color tracking and luminance of a same still screen, be sure to accomplish the measurement in one minute to ensure its accuracy.
 - 1.11.2 Due to the structure of PDP, the extra-high-bright same screen should not hold over 5 minutes for fear of branding on the panel.

ELECTRICAL CHARACTERISTICS**2. Power Input**

2.1 Voltage : 100 ~ 240VAC

2.2 Input Current : 5.0 /2.5A

2.3 Maximum Inrush Current : <30 A (FOR AC110V ONLY)
Test condition : Measured when switched off for at least 20 mins

2.4 Frequency : 50Hz to 60Hz(±3Hz)

2.5 Power Consumption : ≤ 480W
Test condition : full white display with maximum brightness and contrast

2.6 Power Factor : Meets IEC1000-3-2

2.7 Withstanding voltage : 1.5kVac or 2.2kVdc for 1 sec

3. Display

3.1 Screen Size : 50" Plasma display

3.2 Aspect Ratio : 16:9

3.3 Pixel Resolution : 1366x768

3.4 Peak Brightness : 1000 cd/m² (Panel module without filter)

3.5 Contrast Ratio (Dark room) : 4000:1 (Panel module without filter)

3.6 Viewing Angle : Over 160°

3.7 OSD language : English

4. Signal**4.1 AV & Graphic input**

4.1.1 TV standard : NTSC,PAL/N,PAL/M

4.1.2 TV Tuning system : PLL 181CH

4.1.3 CATV : 125CH

4.1.4 Composite signal : CVBS

4.1.5 Y,C Signal : S-Video

4.1.6 Component signal : Y, Pb/Cb, Pr/Cr, HDTV compatible

4.1.7 Graphic I/P : Analog: D-sub 15pin detachable cable
Digital: DVI

4.1.8 EDID compatibility : DDC 1.3

4.1.9 I/P frequency : f_H: 31.5kHz to 60kHz/f_V: 56.25Hz to 75Hz (1024X768 recommended)

4.2 Audio input

Audio I/P(L/Rx5) : 1 for DVI / D-Sub
1 for Y/ Pb/Pr
1 for Y/ Cb/Cr
1 for CVBS
1 for S-Video

4.3 AV output

Audio&Video O/P(RCAx3) : Monitor out(Video & Audio L/R)

4.4 Other function

: PIP/POP/PBP, Picture size, Picture Still, Sound mode, Last memory, Timer, MTS

5. Environment**5.1 Operating environment**

5.1.1 Temperature : 5° to 33°C
5.1.2 Relative humidity: 20% to 85%(non-condensing)

5.2 Storage and Transport

5.2.1 Temperature : -20°C to 60°C(-4° to 140°F)
5.2.2 Relative humidity: 5% to 95%

6. Panel Characteristics

6.1 Type : LG50X2

6.2 Size : 50", 1190mm(width)x7005mm(height)x59mm(depth)±1 mm)

6.3 Aspect ratio : 16:9

6.4 Viewing angle : Over 160°

6.5 Resolution : 1366X768

6.6 Weight : 22.0kg ±0.5 kg (Net)

6.7 Color : **1024(R)X1024(G)X1024(B) COLORS**

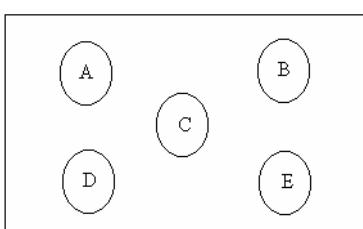
6.8 Contrast : Average 60:1 (In a bright room with 150Lux at center)

Typical 4000:1 (In a dark room 1/100 White Window pattern at center).

6.9 Peak brightness : Typical 1000cd/m² (1/25 White Window)

6.10 Color Coordinate Uniformity : Contrast; Brightness and Color control at normal setting

Test Pattern : Full white pattern



Average of point A,B,C,D and E +/- 0.01

6.11 Color temperature : Contrast at center (50); Brightness center (50); Color temperature set at Natural
x=0.300±0.02
y=0.300±0.02

6.12 Cell Defect Specifications
Subject to Panel supplier specification as appends.

7. Front Panel Control Button

7.1 CH Up / Down Button : Push the key to changing the channel up or down.
When selecting the item on OSD menu.

Volume Up/ Down Button : Push the key to increase the volume up or down.
When selecting the adjusting item on OSD menu increase or decrease the data-bar.

Menu Button : Enter to the OSD menu.

Source Select Button : Push the key to select the input signals source.

7.2 Stand by Button : Switch on main power, or switch off to enter power Saving modes.

7.3 Main Power Switch : Turn on or off the unit.

8. OSD Function

8.1 Picture : State (Normal,Dark,Bright,User); Display (Bright,contrast,Color,Hue)
Temp (warm,Cool,Normal,User);
Position (H-posit,V-posit,Phase,H-size,Auto Adjust)

8.2 Sound : Setup (Mode,AVC,Volume,Balance);
Equalizer (120HZ,500HZ,1.5KHZ,5KHZ,10KHZ)
BBE Setup (Gain,Treble,Bass)

8.3 OSD : Size (Panorama,16:9,Normal,Anamorphic,Letter Box,TV Mode)
OSD Set (Language,OSD Position,Time Out)
Option (Burn Protect, Version)
V-Chip , C/C

8.4 Layout : Layout (Full Screen,PIP,Split Screen,Grid,POP 3,POP 12)
PIP Set (Sub Win Source,Sub Win Size,PIP Size,PIP Position)

8.5 Time : Sleep (30Min,60Min,90Min,120Min,180Min)
Wake Up (Time Edit,Volume,TV Mode,Channel)
Time Set

8.6 TV Set : TV Set (Auto Search,Manul Search,System,MTS,Auto Fine,Fine)
CH Edit

9. Agency Approvals

Safety UL60950

Emissions FCC class B

10. Reliability11.1 MTBF : 20,000 hours(Use moving picture signal at 25°C ambient)**11. Accessories** : User manual x1, Remote control x1, Stand x1, Power cord x1, Battery x 2, Accessories box x 1, Speaker x 2, Speaker wire x2

12. Support the Signal Mode

A. D-Sub Mode (VGA or DVI)

NO.	Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Dot Clock Frequency (MHz)
1	640 x 400	31.47	70.08	25.17
2	640 x 480	31.50	60.00	25.18
3	640 x 480	35.00	67.00	30.24
4	640 x 480	37.50	75.00	31.50
5	640 x 480	37.86	72.81	31.50
6	720 x 400	31.47	70.08	28.32
7	800 x 600	35.16	56.25	36.00
8	800 x 600	37.90	60.32	40.00
9	800 x 600	46.90	75.00	49.50
10	800 x 600	48.08	72.19	50.00
11	832 x 624	49.00	74.00	57.27
12	1024 x 768	48.40	60.00	65.00
13	1024 x 768	56.50	70.00	75.00
14	1024 x 768	60.00	75.00	78.75
15	1152 x 864	54.53	61.13	80.37
16	1152 x 864	63.86	70.02	94.51
17	1152 x 864	67.52	75.02	108.03
18	1280 x 960	60.02	60.02	108.04
19	1280 x 1024	64.00	60.01	108.00

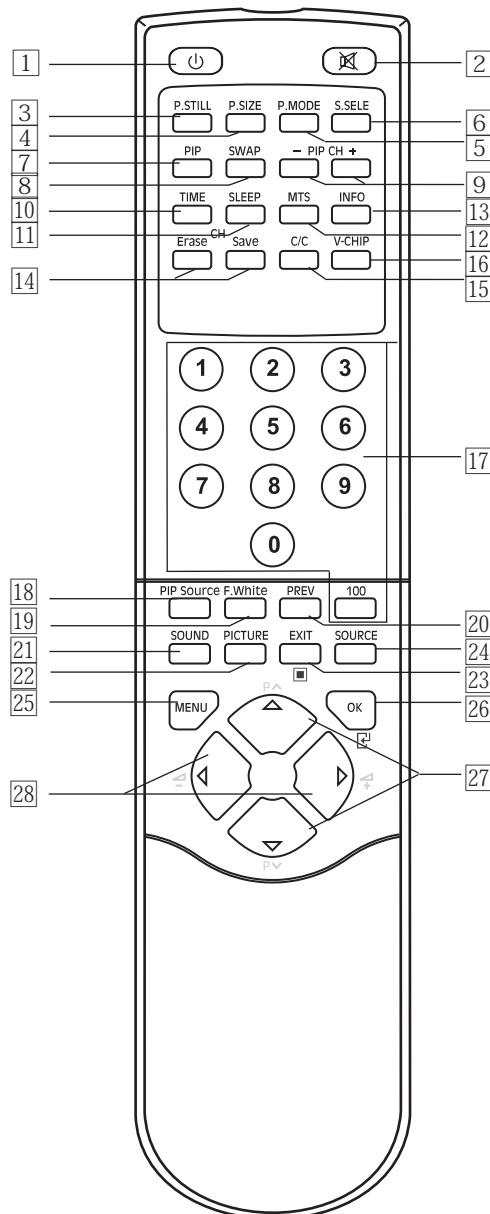
B. DTV Mode

NO.	Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Dot Clock Frequency (MHz)
1	480 i	15.734	59.94	13.50
2	576 i	15.625	50.00	13.50
3	480p(720x480)	31.468	59.94	27.00
4	576p(720x576)	31.25	50.00	27.00
5	720p(1280x720)	45.00	60.00	74.25
6	720p(1280x720)	37.50	50.00	74.25
7	1080i(1920x1080)	28.125	50.00	74.25
8	1080i(1920x1080)	33.75	60.00	74.25

- When the signal received by the Display exceeds the allowed range, a warning message "Out Of Range" shall appear on the screen.
- You can confirm the input signal format from the "OSD Menu".

13. Remote Control

- 1 **Power (⌂)**: Press to turn on and off.
- 2 **Mute (✘)**: Press to mute the sound. Press again or press ► to restore the sound.
- 3 **P.STILL**: Press to freeze the picture. Press again to restore the picture.
- 4 **P.SIZE**: Press to cycles through the picture size: Normal, Fill Screen, Anamorphic, Letter Box or TV Mode, Panorama..
- 5 **P. MODE**: Press to cycles through the picture mode: Normal, Bright, Dark, User.
- 6 **S.SELE**: Press to cycles through the sound select: Main window sound or Sub window sound.
- 7 **PIP**: Press to turns on PIP (picture-in-picture) feature. Such as Full Screen, PIP or Split Screen.
- 8 **SWAP**: Press to switches the Main window or Sub window pictures.
- 9 **PIP CH+ :** Press to select Sub window Channel Up.
- 10 **PIP CH- :** Press to select Sub window Channel Down.
- 11 **TIME**: Press to display the current time.
- 12 **SLEEP**: Press repeatedly until it displays the time in minutes (30 Min, 60 Min, 90 Min, 120 Min, 180 Min or Off) that you want the PDP to remain on before shutting off. To cancel Sleep Time, press SLEEP repeatedly until Sleep Off appears. And you can press ▲ or ▼ to select sleep time shut down.
- 13 **MTS**: Press repeatedly to cycle through the Multi-channel TV sound (MTS) options: Mono, Stereo and SAP (Second Audio Program).
- 14 **INFO**: Press to display on-screen information. Press it again to turn the display off.
- 15 **CH Erase, CH Save buttons**: Press to erase or save channel.
- 16 **C/C**: Press to select the Closed Caption mode.
- 17 **V-Chip**: Press to select the child protect mode.
- 18 **Number buttons**: Press 0~9,100 to select a channel; the channel changes after 2 seconds.
- 19 **PIP Source**: Press to select the signal for Sub Window.(Only for PIP.)
- 20 **F.WHITE**: Press to show a full white picture.
- 21 **PREV**: Press it returns to the last viewed channel.(Only for TV.)



- 21** **SOUND:** Press to select different sound system, such as Normal, Flat, News, Cinema, User or BBE Digital.
- 22** **PICTURE:** Press to select "BRIGHTNESS", "COLOR", "CONTRAST", "HUE" or "SHARPNESS", and you can use **◀** or **▶** to adjust.
- 23** **EXIT:** Press to return or exit OSD menu.
- 24** **SOURCE:** Press to select the signal sources directly. Such as TV, AV1, S-VIDEO, YCbCr, YPbPr, Analog RGB or Digital RGB.
- 25** **MENU:** Press to display the OSD Menu.
- 26** **OK:** Press to enter or confirm.
- 27** **▲ / ▼ :** They are used as **▲** / **▼** buttons in the OSD Menu screen and they can be used for the selection of the program when the OSD Menu is not shown on the screen.
- 28** **◀ / ▶ :** They are used as **◀** / **▶** buttons in the OSD Menu screen and they can be used for the adjustment of volume when the OSD Menu is not shown on the screen.

PHYSICAL CHARACTERISTICS

14. Power Cord

Length : 1.8m nominal

Type : optional

15. Cabinet

15.1 Color : silver colour as defined by colour plaque reference number

15.2 Weight

Net weight : 51.8kg

Gross weight : 74kg

15.3 Dimensions (with stand&speak)

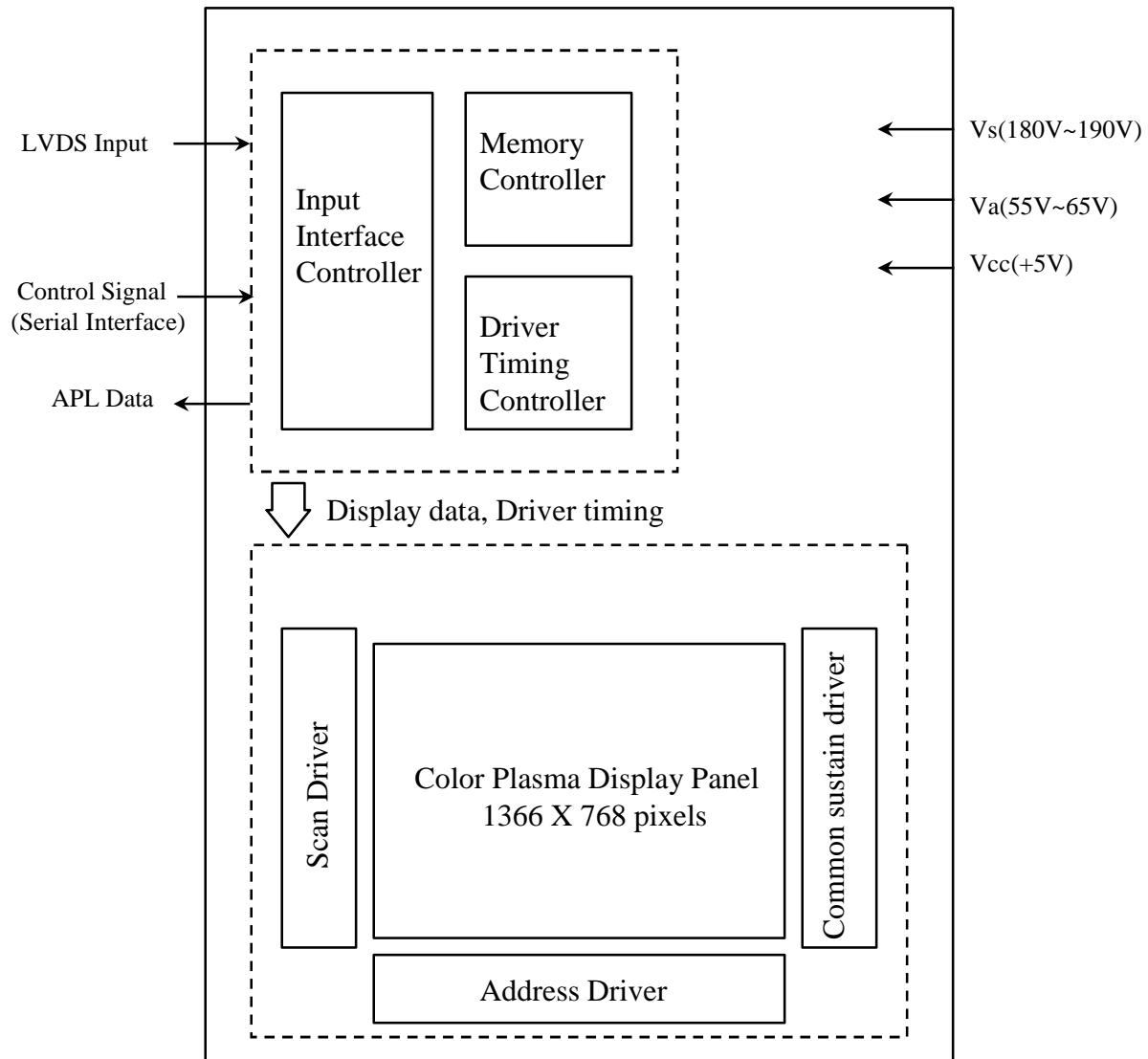
Width : 1227.8mm

Height : 739.8mm

Depth : 120.6mm

Block Diagram

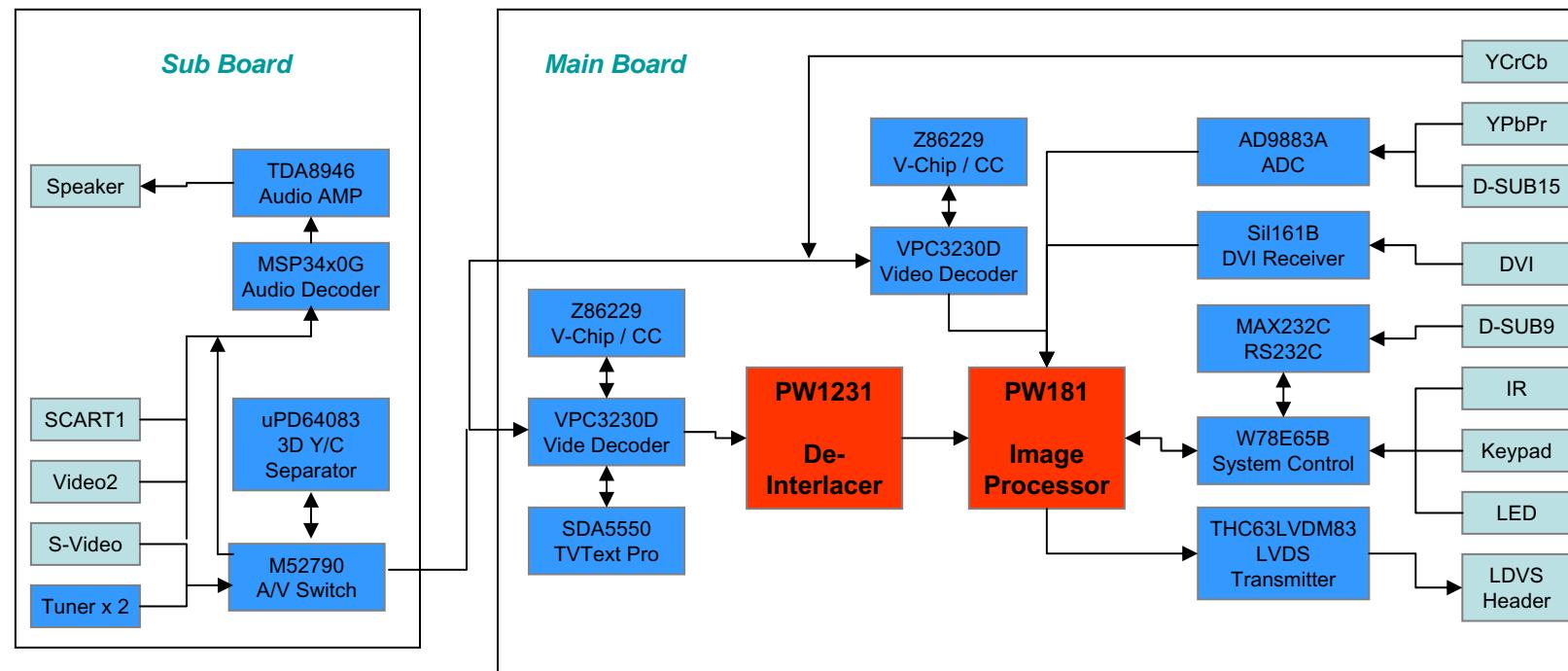
Product Specification of PDP Module



Applied Voltage level is specified at the time when Full-White pattern is displayed on the panel.

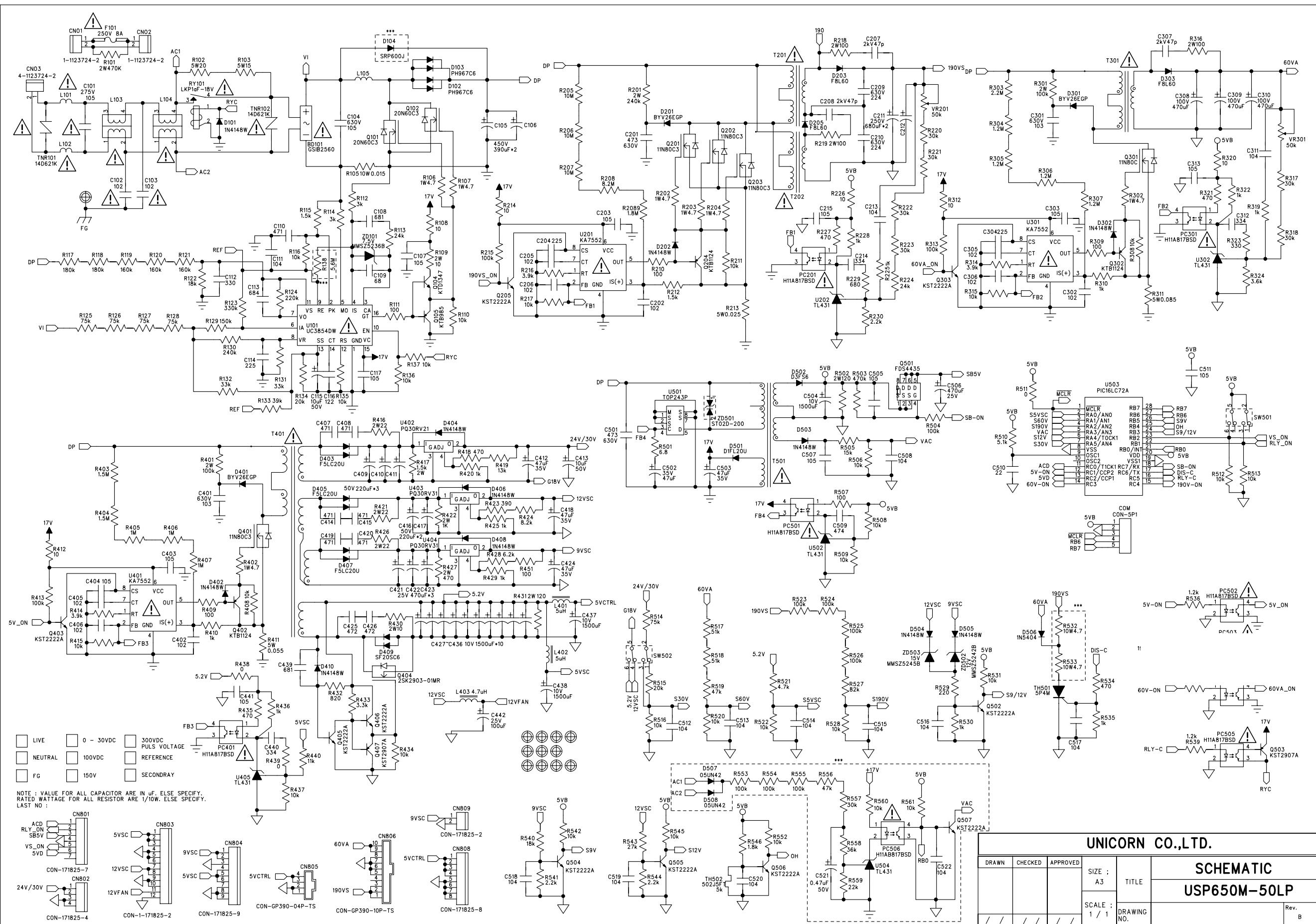
Block Diagram

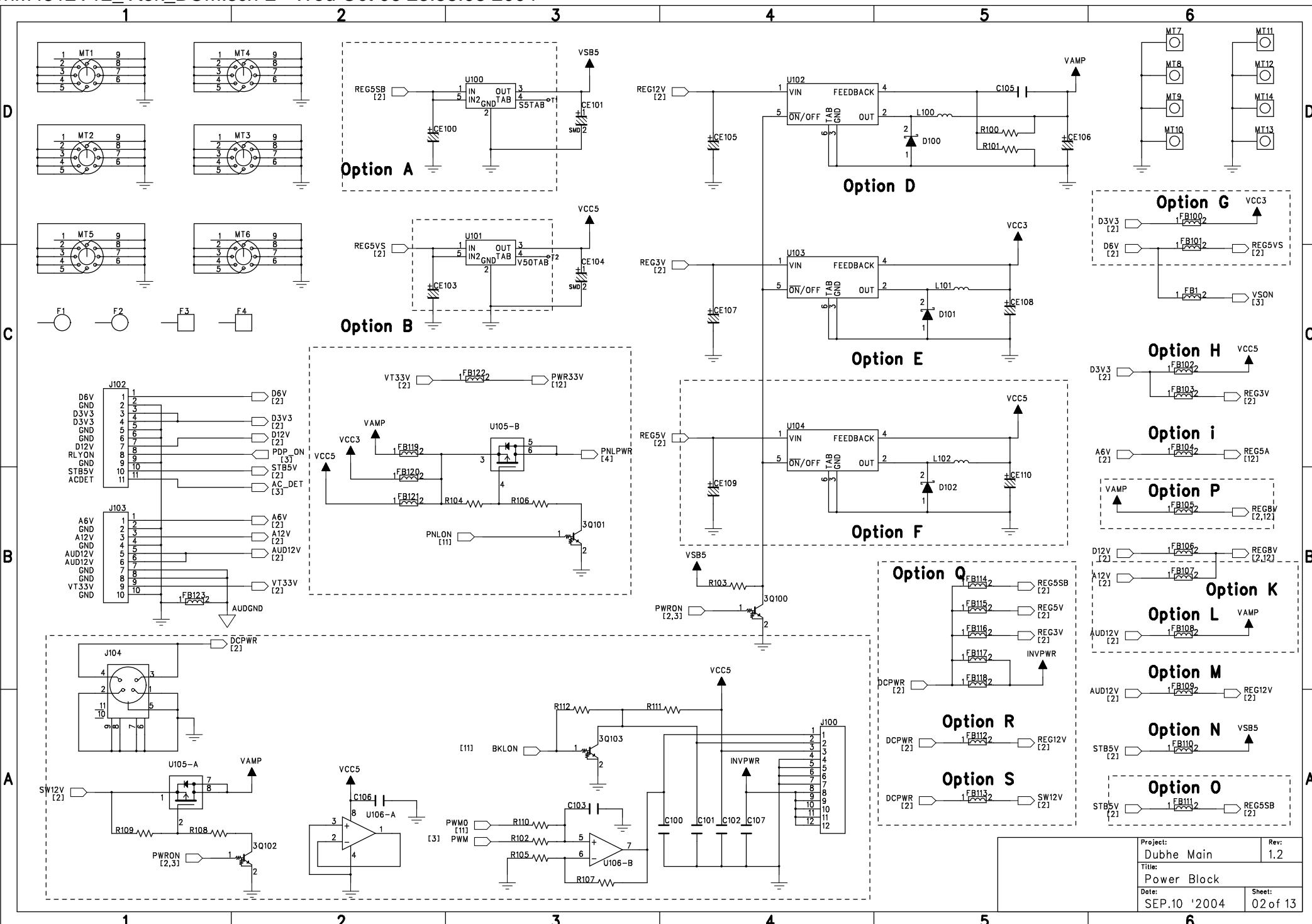
MAIN/AUDIO BOARD

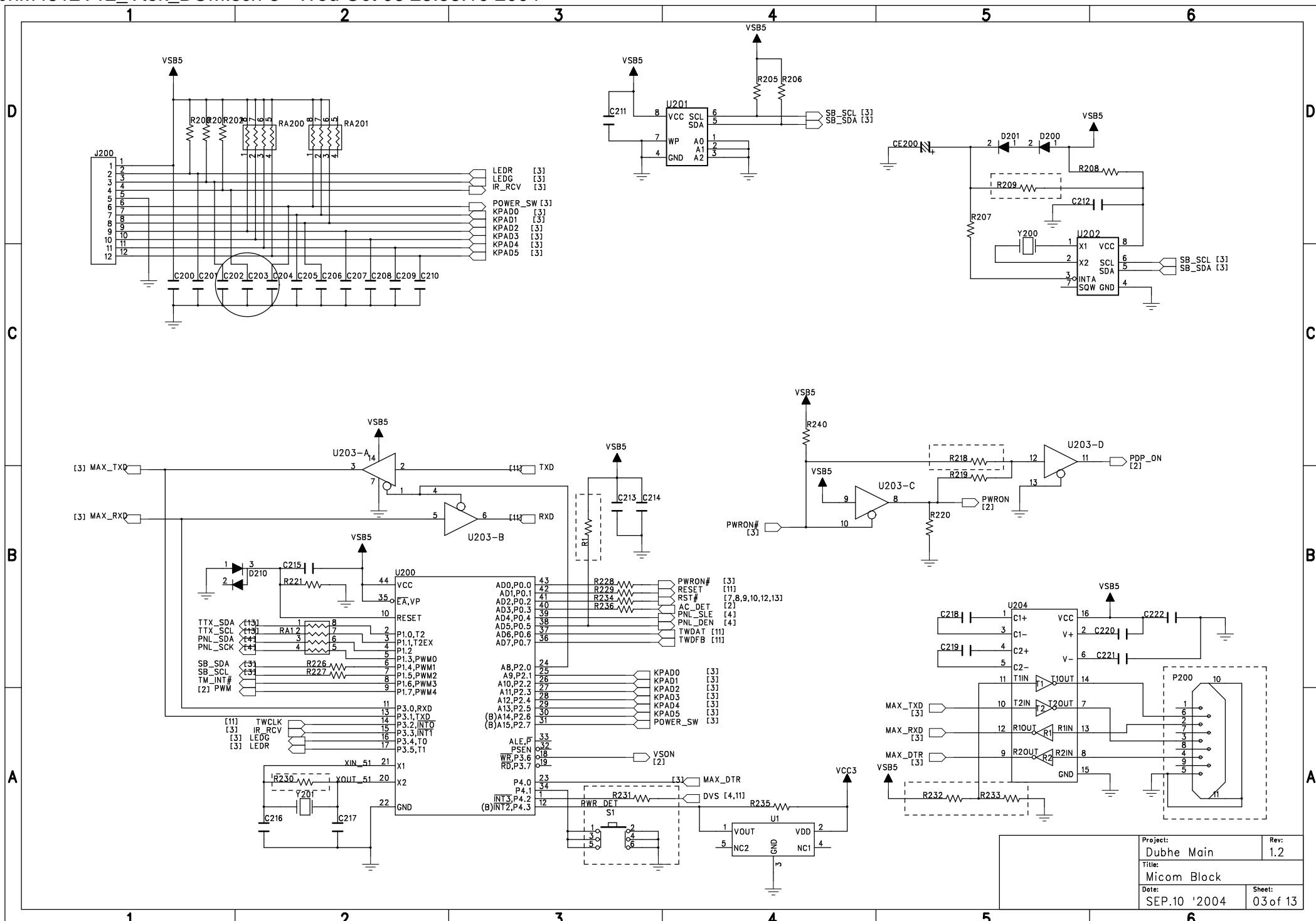


Circuit Diagram

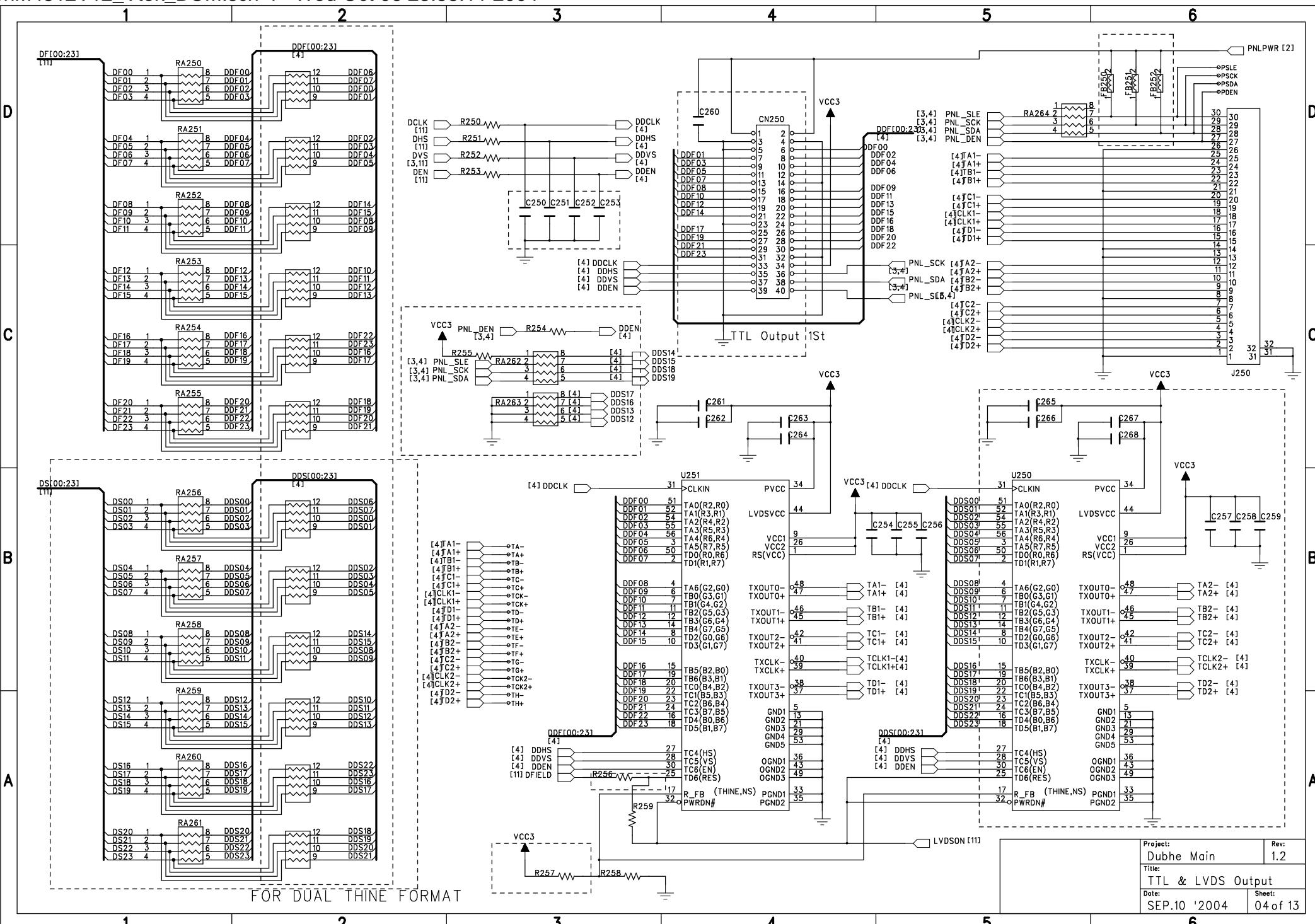
- Power supply board of PDP Module, USP650M-50LP**
- Main (Video) board**
- Audio/Tuner board**
- Keypad board**
- Remote control receiver board**
- Remote control board**

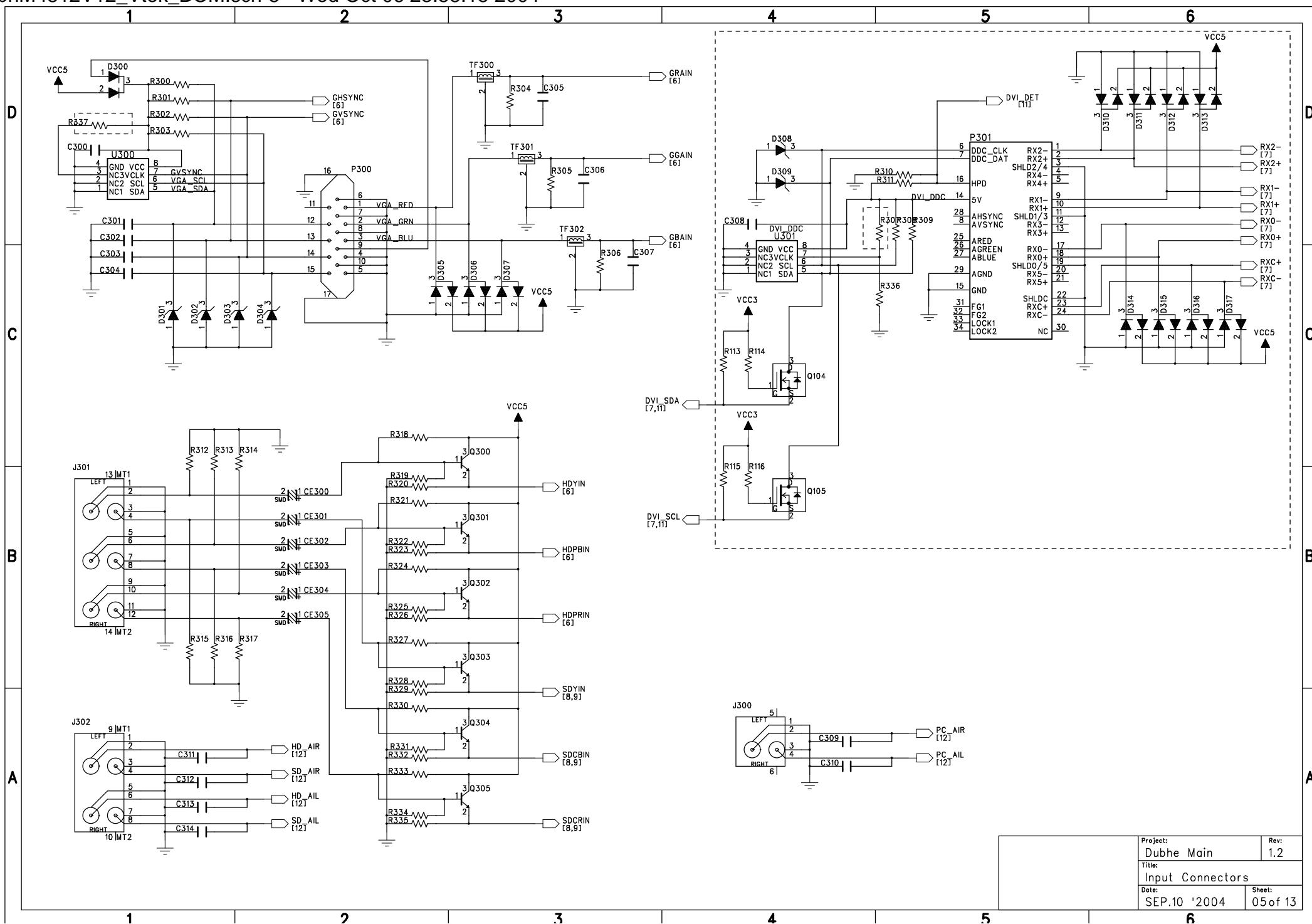


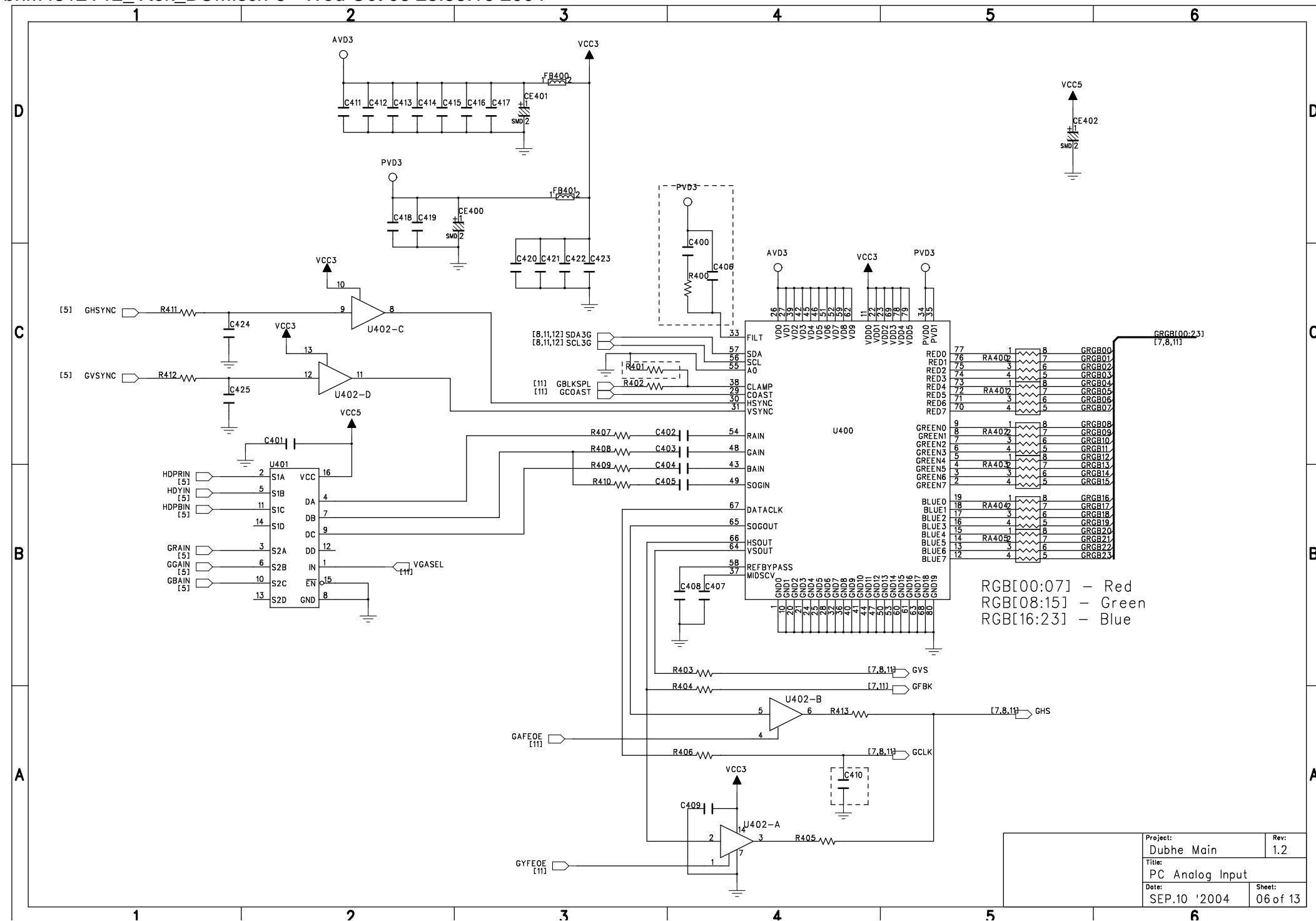


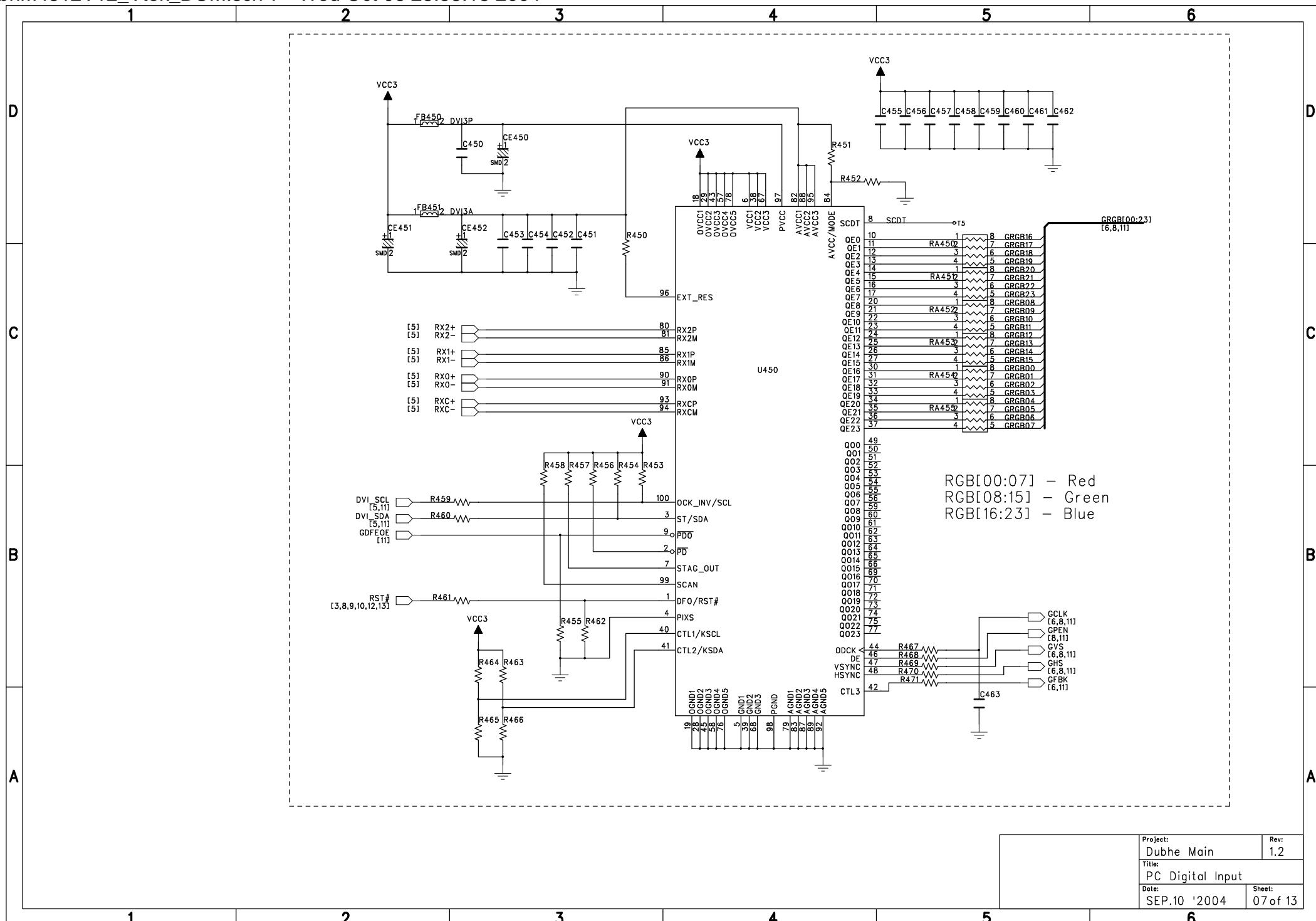


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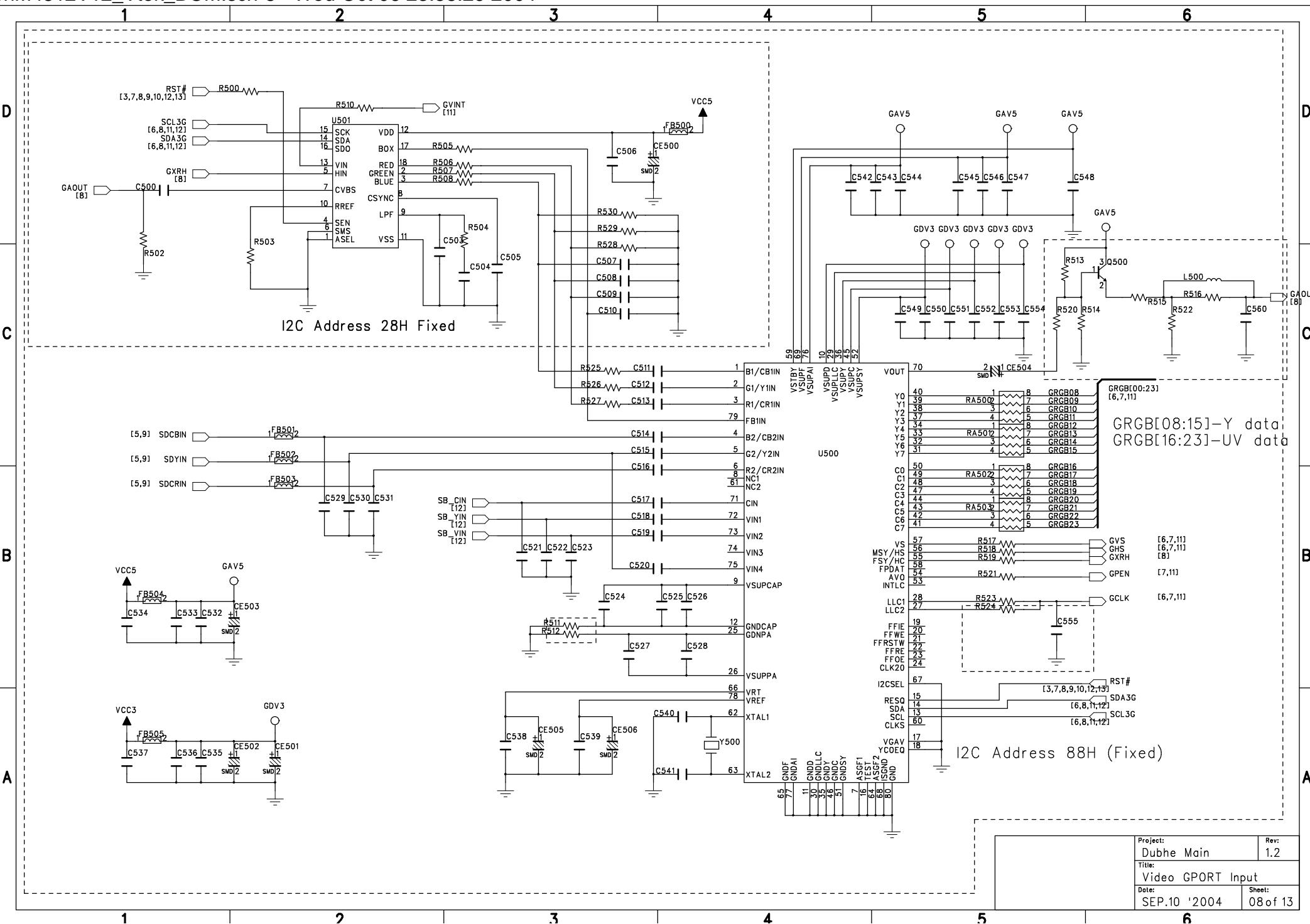


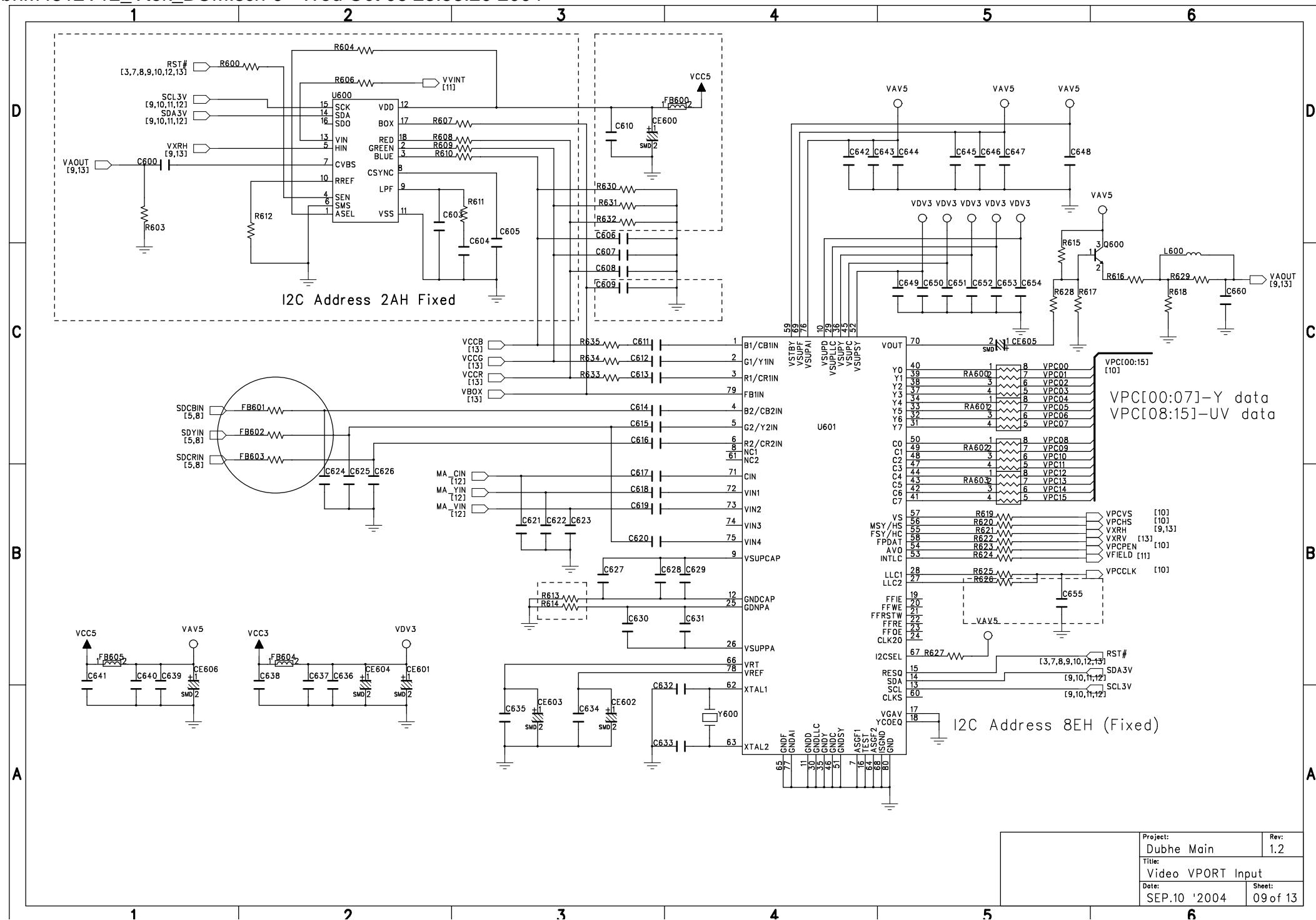


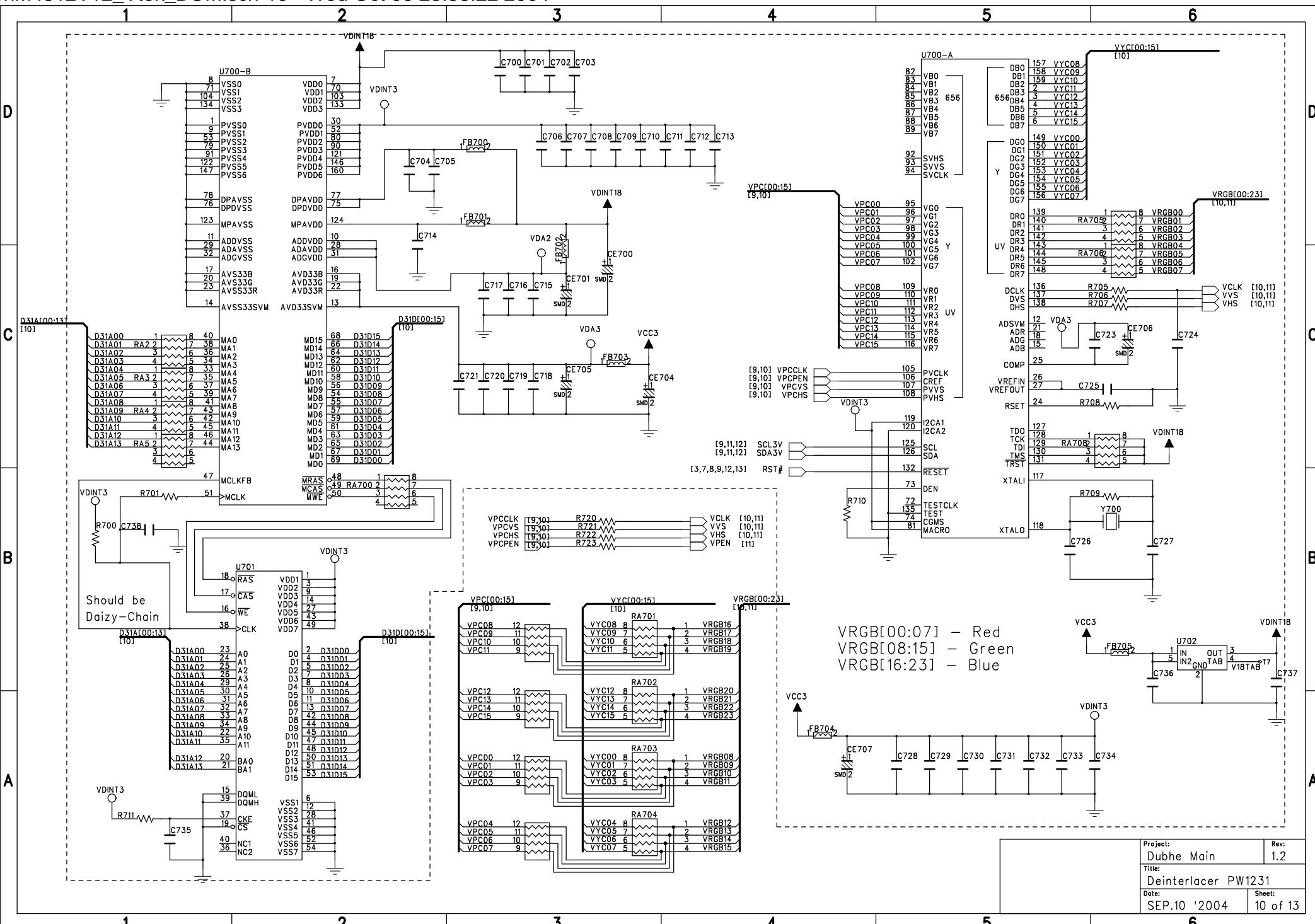


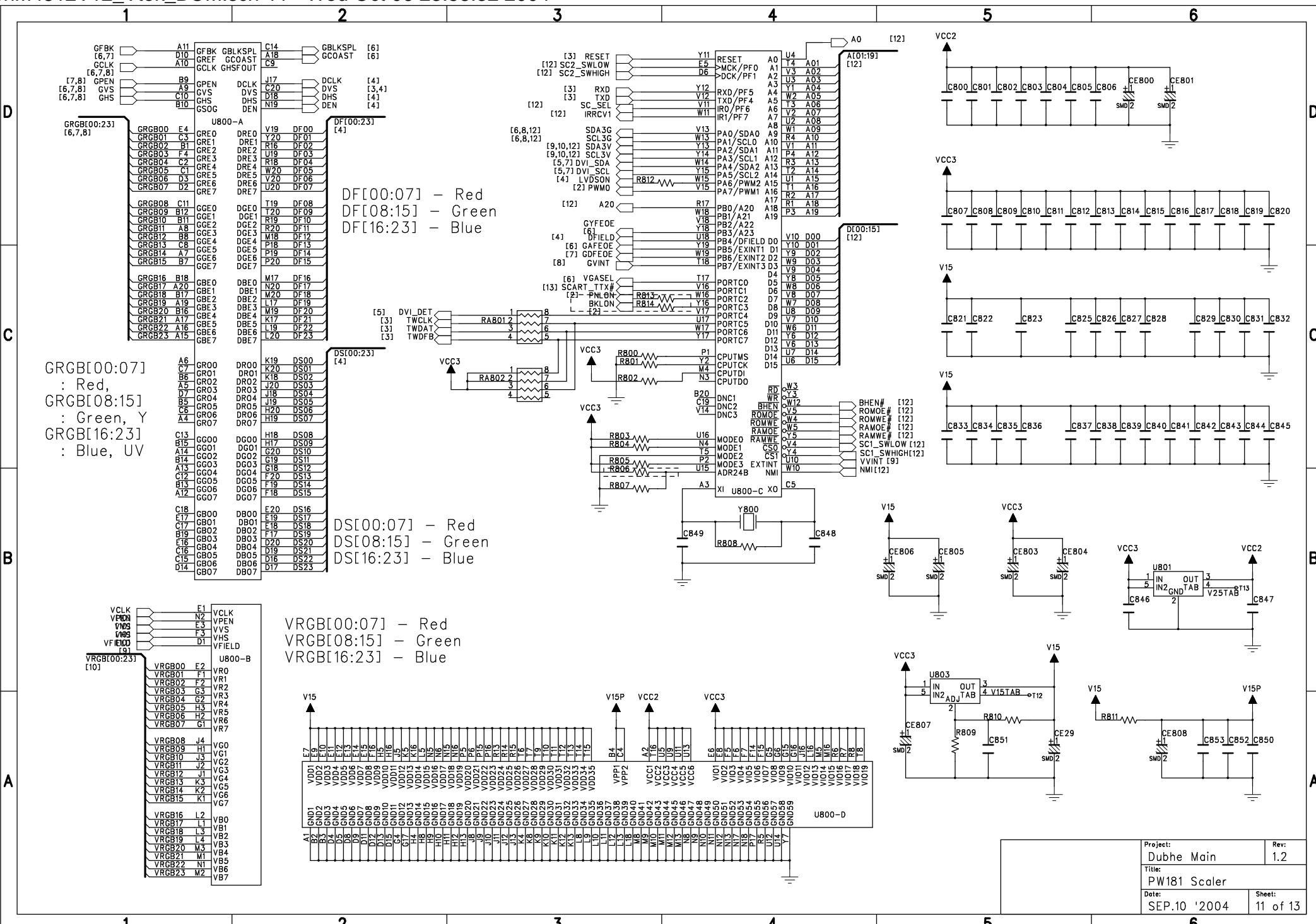


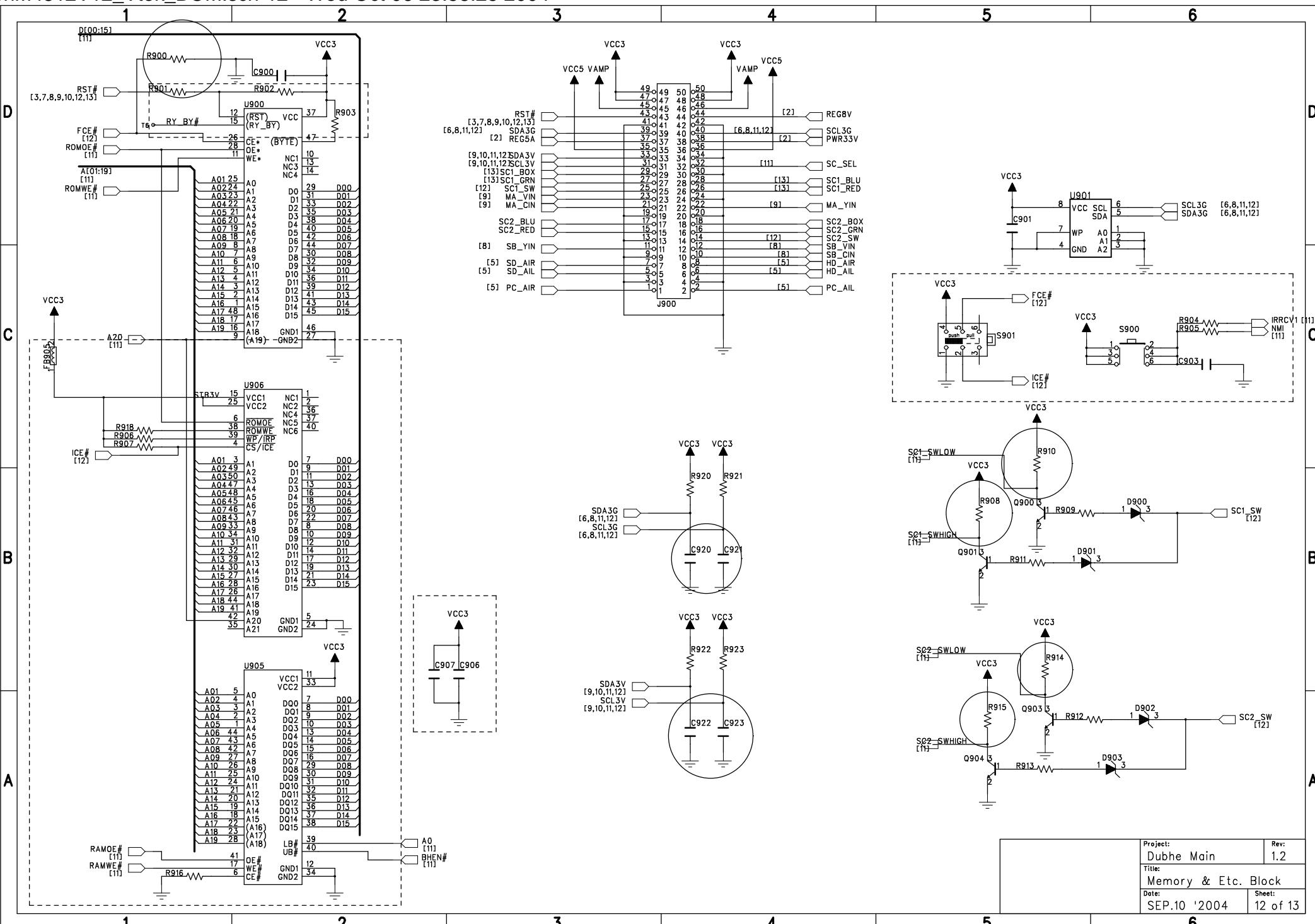
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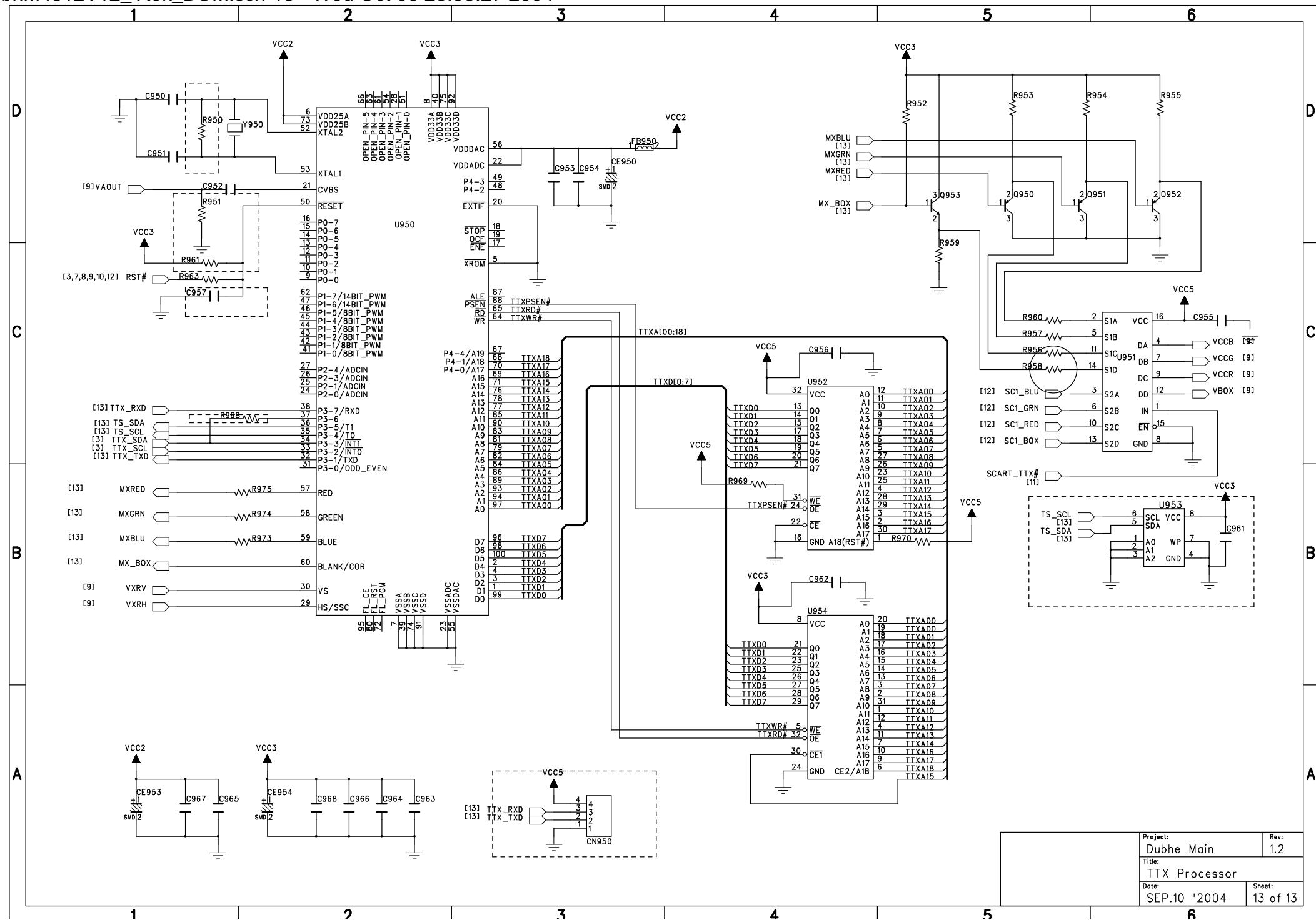


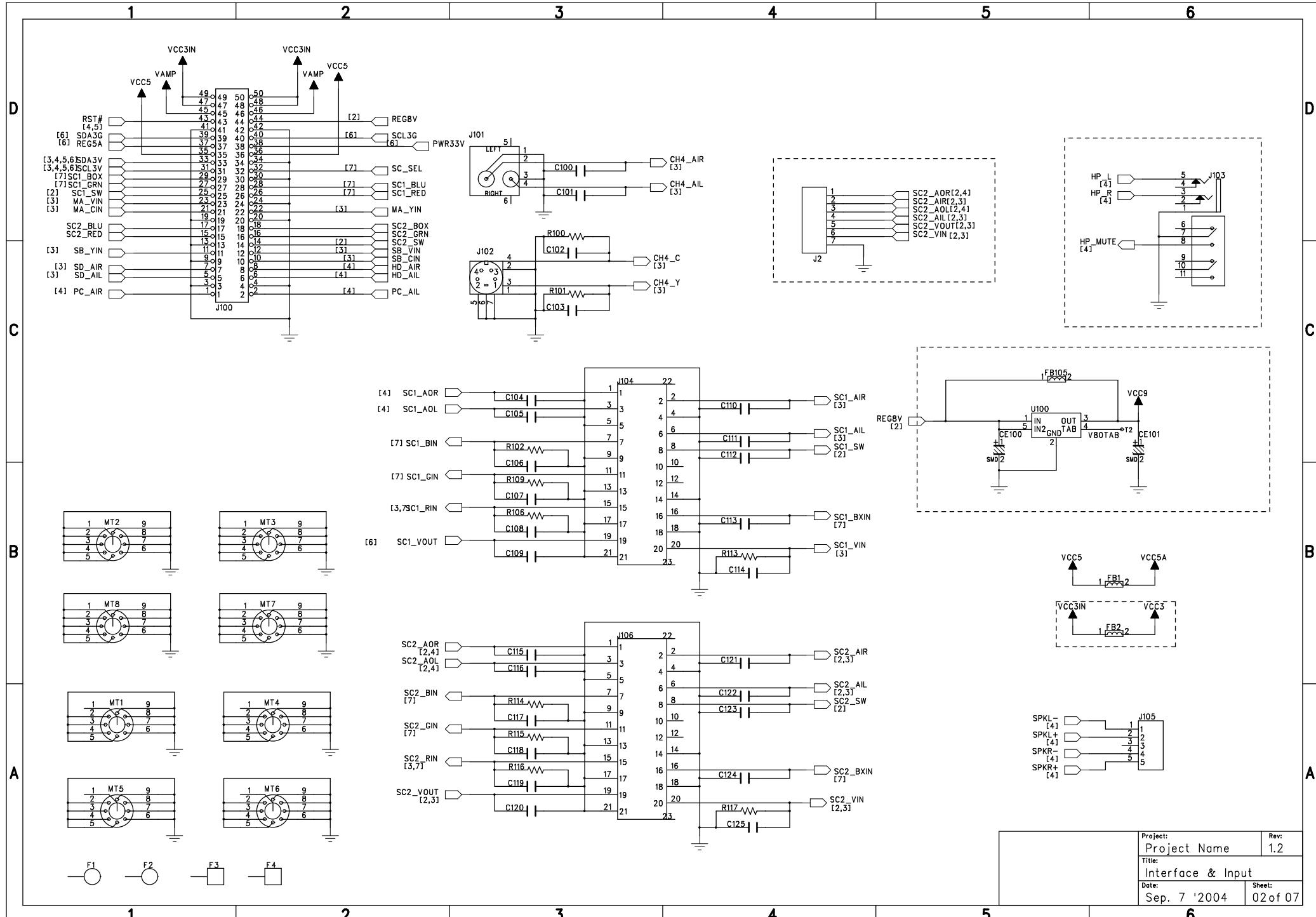


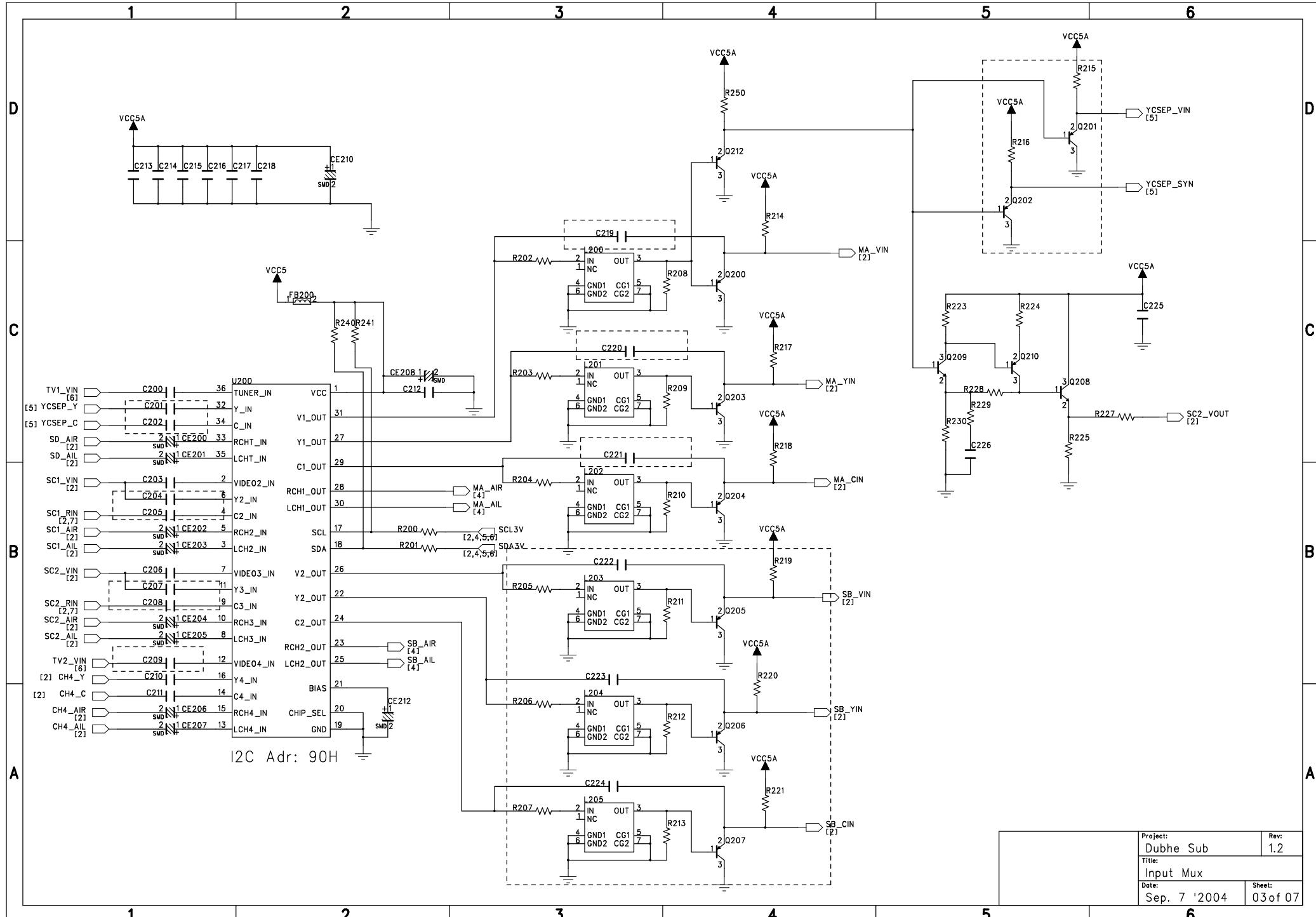


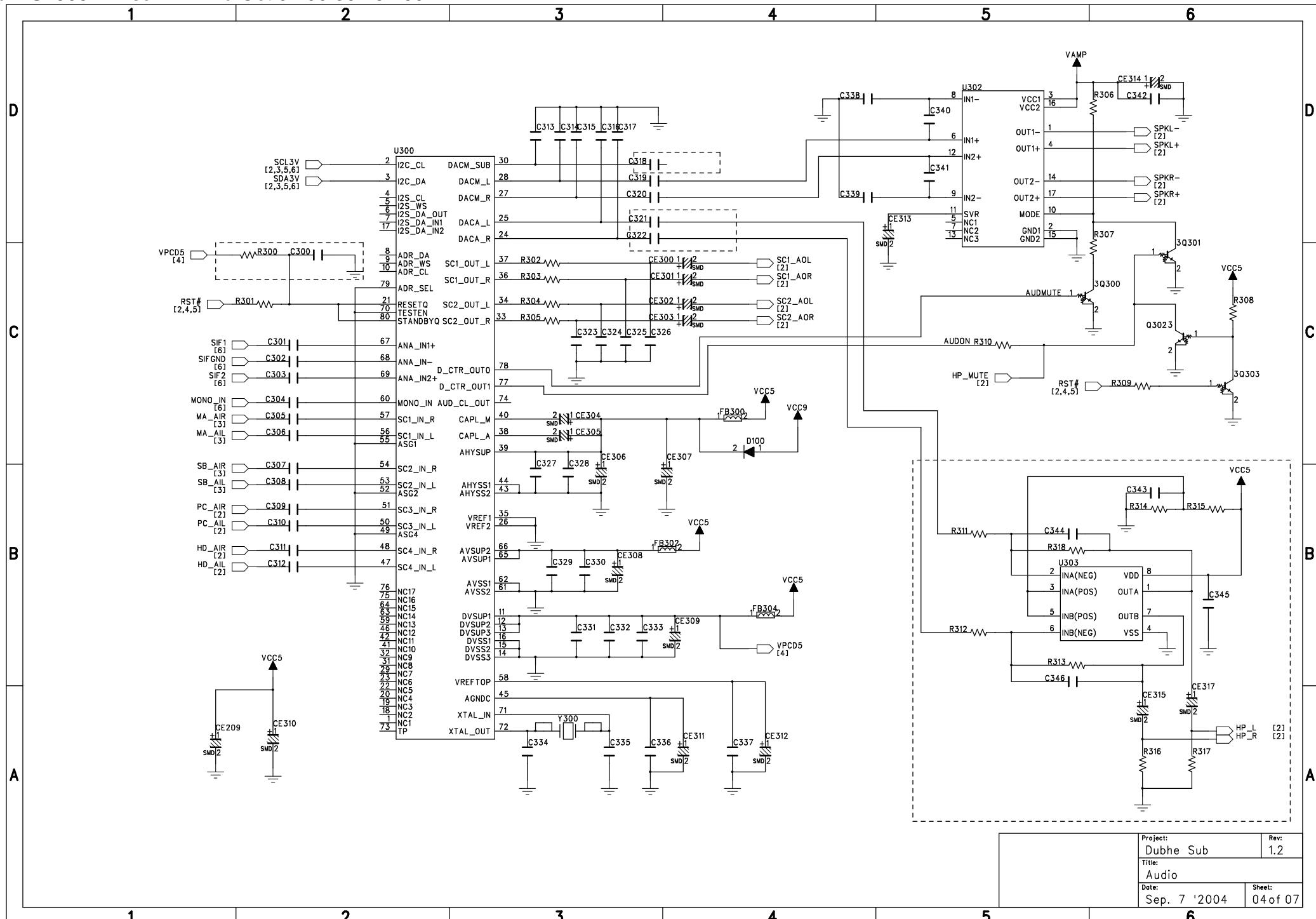


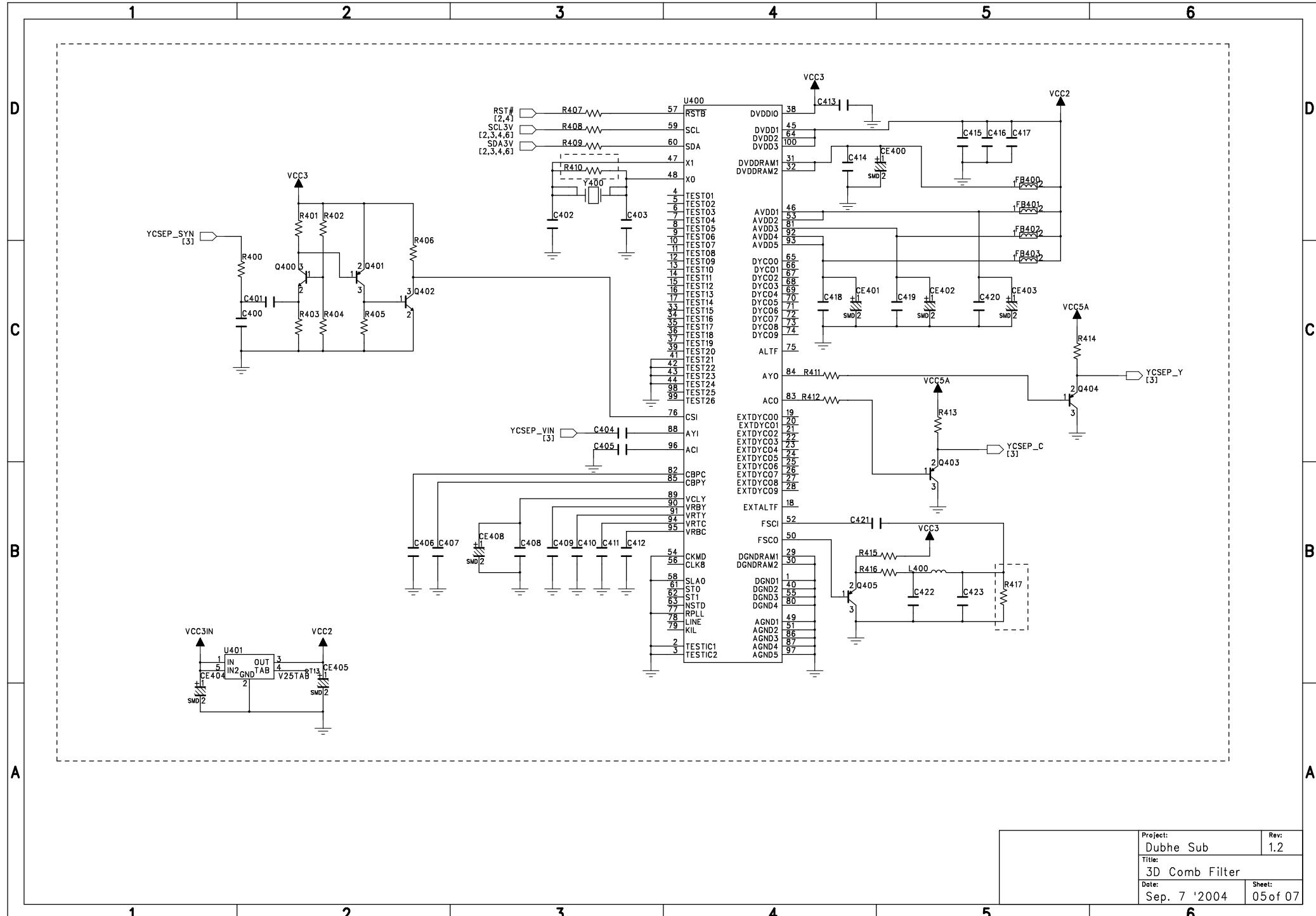


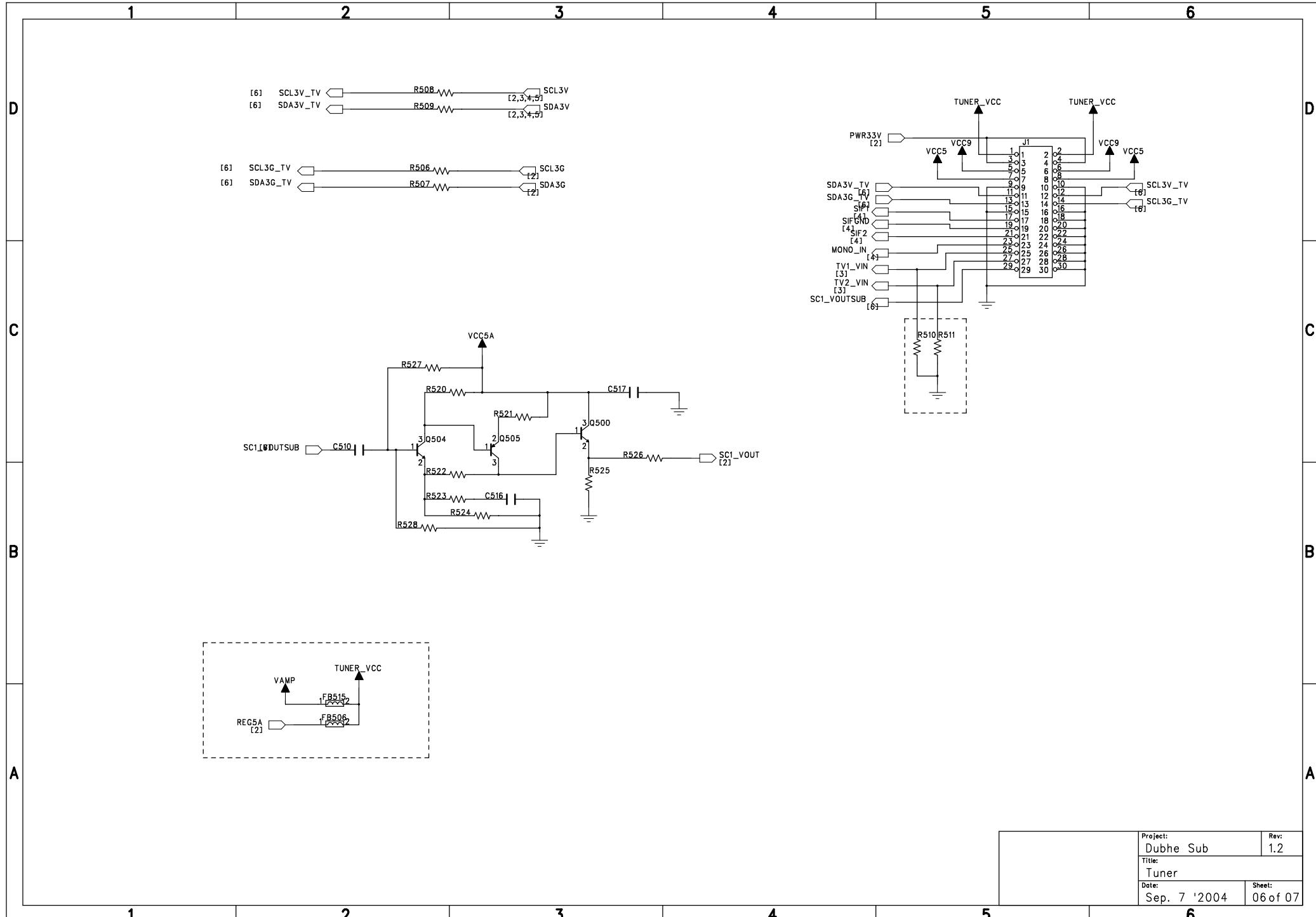




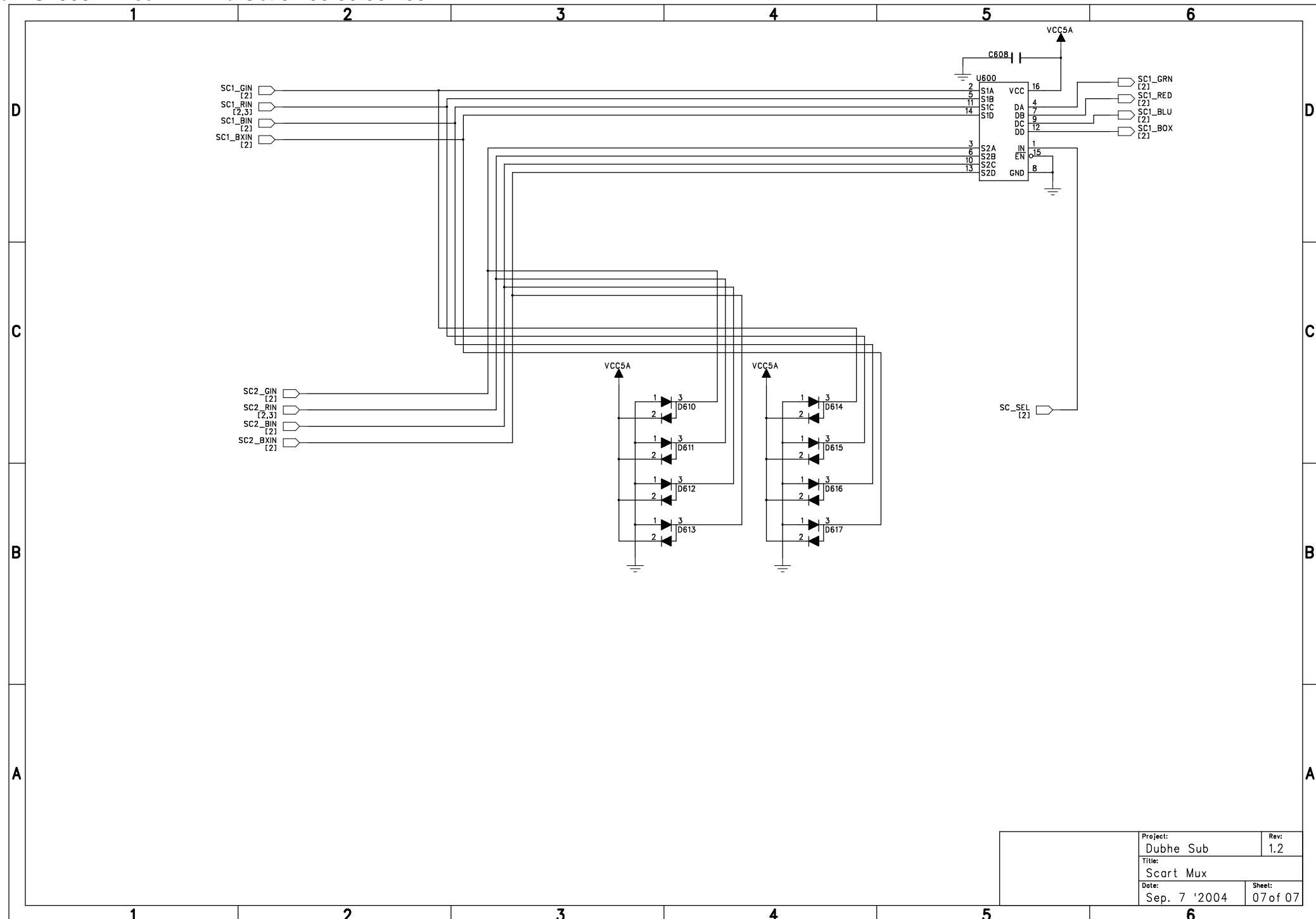




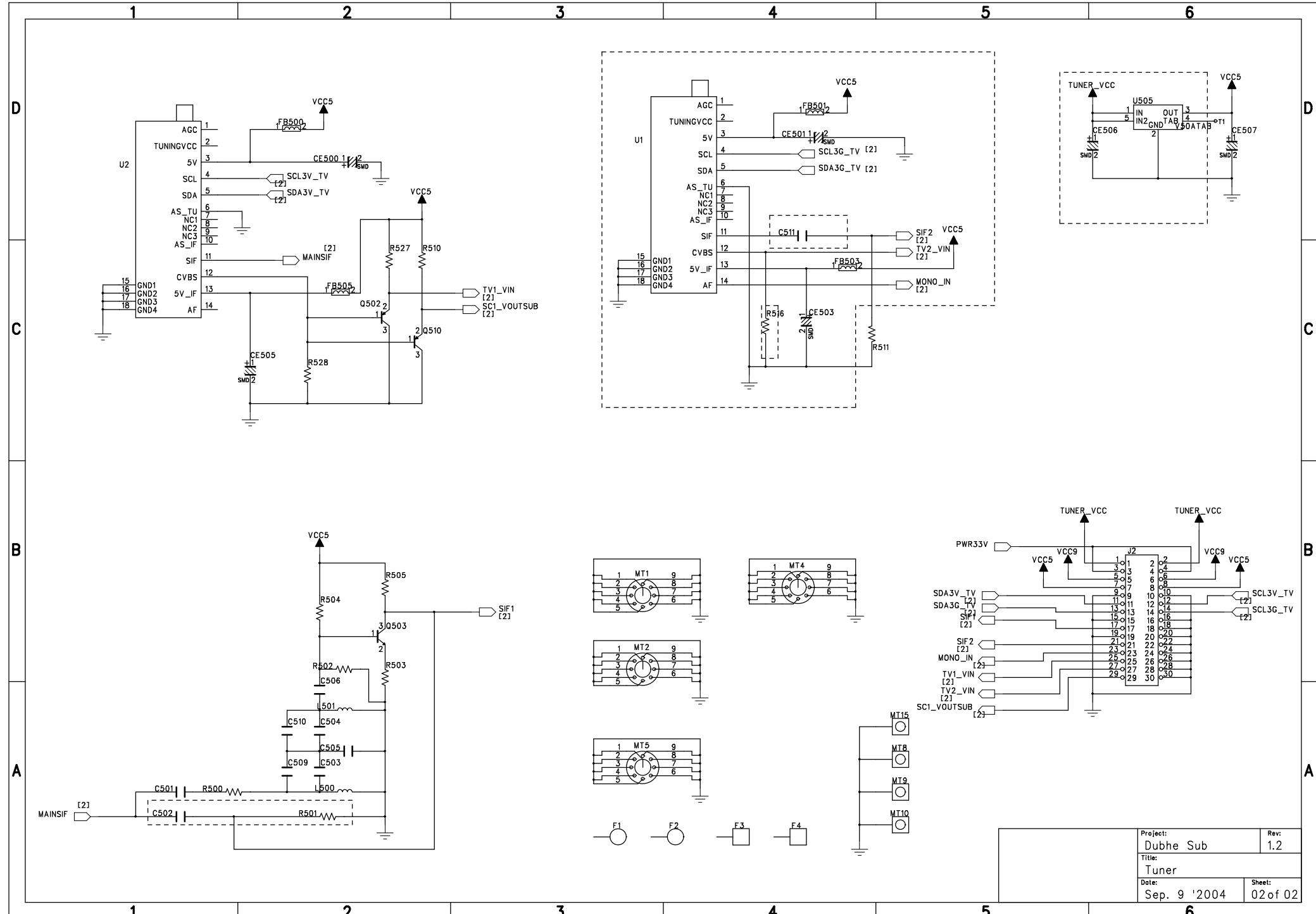




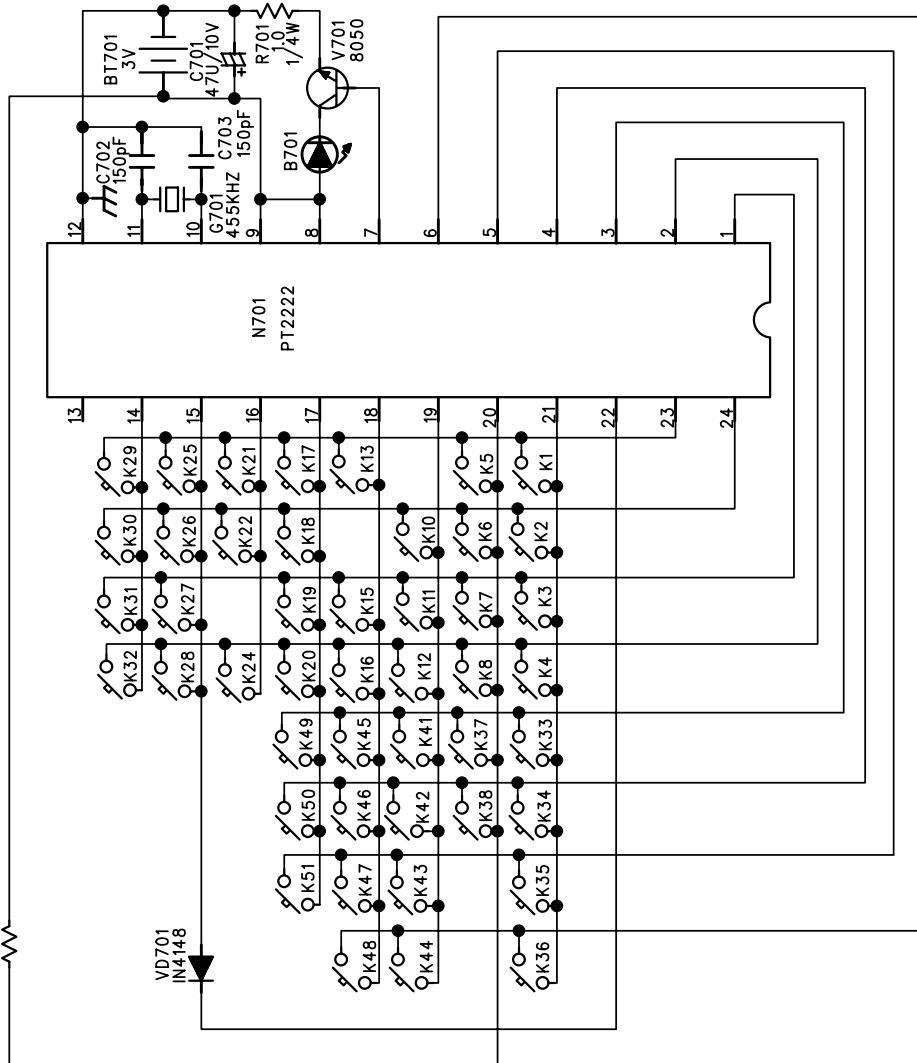
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REMOTE PCB

R702
56K

REMOTE CONTROL CODE ASSIGNMENT

KEY NO.	KEY NAME	DATA CODE	KEY NO.	KEY NAME	DATA CODE
K1	POWER	00	K33	dumb	40
K2	1	01	K34	dumb	41
K3	2	02	K35	dumb	42
K4	3	03	K36	dumb	43
K5	P.MODE	04	K37	MUTE	44
K6	4	05	K38	INFO	45
K7	5	06	K39	nil	46
K8	6	07	K40	nil	47
K9	nil	08	K41	100	48
K10	7	09	K42	PREV	49
K11	8	0A	K43	P.STILL	4A
K12	9	0B	K44	SOUND	4B
K13	MTS	0C	K45	SLEEP	4C
K14	nil	0D	K46	TIME	4D
K15	S.SELECT	0E	K47	Picture	4E
K16	OK	0F	K48	CH.Erase	4F
K17	CH.+	10	K49	CH.Save	50
K18	Vol.+	11	K50	C/C	51
K19	Vol.-	12	K51	V-CH/P	52
K20	CH.-	13	K52	nil	53
K21	MENU	14	K53	nil	54
K22	Source	15	K54	nil	55
K23	nil	16	K55	nil	56
K24	P.SIZE	17	K56	nil	57
K25	0	18	K57	nil	58
K26	F.White	19	K58	nil	59
K27	PIP Source	1A	K59	nil	5A
K28	EXIT	1B	K60	nil	5B
K29	PIP	1C	K61	nil	5C
K30	SWAP	1D	K62	nil	5D
K31	PIP CH-	1E	K63	nil	5E
K32	PIP CH+	1F	K64	nil	5F

CUSTOM CODE: 20DD

FOR NTSC

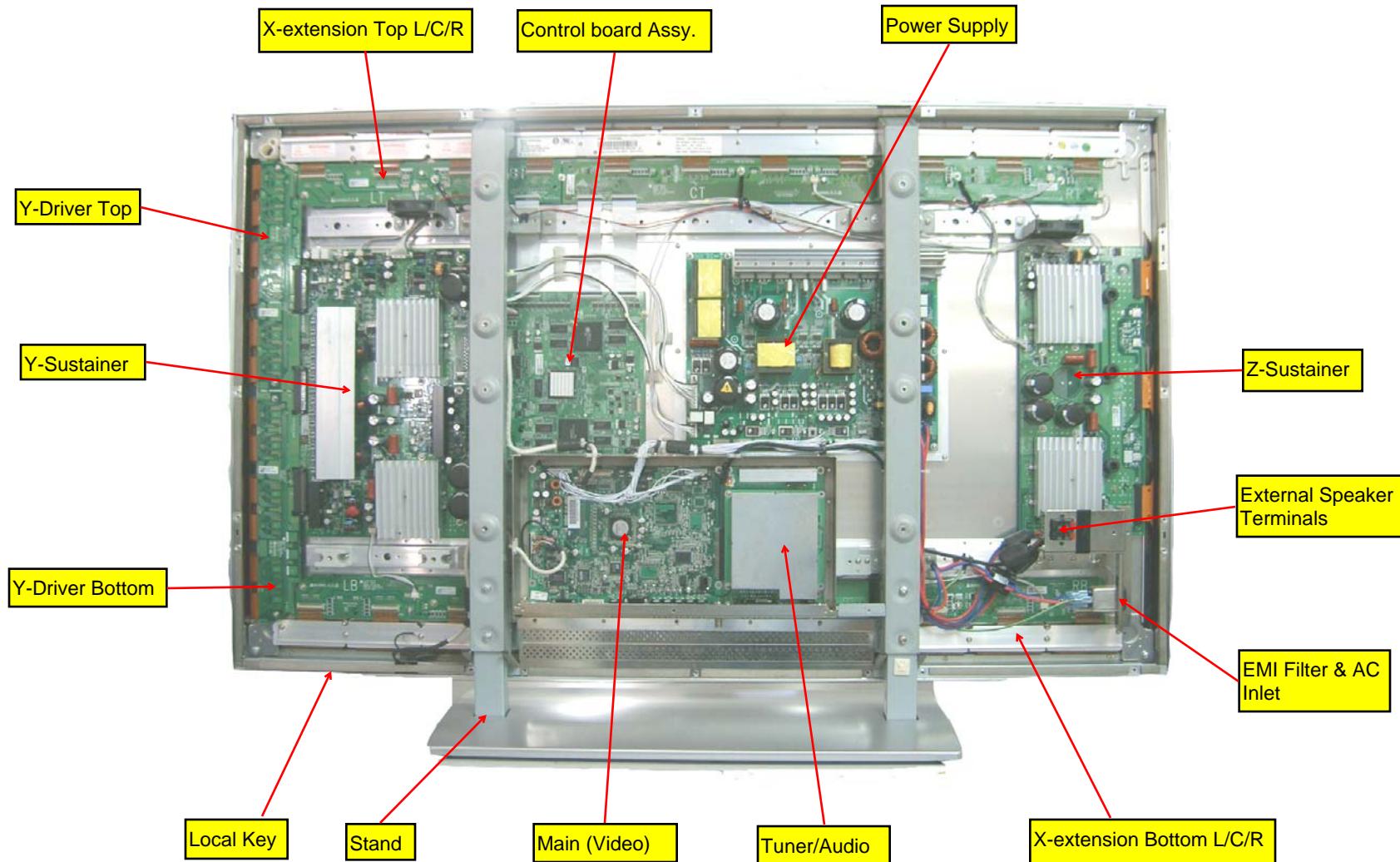
Basic Operations & Circuit Description

MODULE

There are 1 pc. panel and 12 pc.s PCB including 2 pc.s Y/Z Sustainer board, 2 pc.s Y Drive board, 6 pc.s X Extension boards, 1 pc. Control (Signal Input) and 1 pc. Power board in the Module.

SET

There are 5 pc.s PCBs including 1 pc. Tuner/Audio board, 1 pc. Keypad board, 1 pc. Remote Control Receiver board, 1 pc. L/R Speakers and 1 pc. Main (Video) board in the SET.



PCB function

1. Power:
 - (1). Input voltage: AC 110V~240V, 47Hz~63Hz.
Input range: AC 90V(Min)~265V(Max) auto regulation.
 - (2). To provide power for PCBs.
2. Main (Video InterFace) board: To converter TV signals, S signals, AV signals, Y Pb/Cb Pr/Cr signals, DVI signals and D-SUB signals to digital ones and to transmit to Control board.
3. Control board: Dealing with the digital signal for output to panel.
4. Y-Sustainer / Z-Sustainer board:
 - (1). Receiving the signals from Control and high voltage supply.
 - (2). Output scanning waveform for Module.
5. Y-Drive board: Receive signal from Y sustainer, output horizontal scanning waveform to the panel.
6. X extension board (6pcs): Output addressing signals.
7. Tuner/Audio Board: Process and Amplifying the audio signal to speakers and convert TV RF signal to video/audio signal and send to Main board.

PCB failure analysis

1. CONTROL : a. Abnormal noise on screen. b. No picture.
2. MAIN (video): a. Lacking color, Bad color scale.
b. No voice.
c. No picture but with signals output, OSD and back light.
d. Abnormal noise on screen.
3. POWER: No picture, no power output.
4. Z - Sustainer : a. No picture.
b. Color not enough.
c. Flash on screen.
5. Y - Sustainer : Darker picture with signals.
6. X - Extension : Abormal vertical noise on screen.
7. Audio Bard: a. No voice. (Make sure Mute/OFF) .
b. Noise.

Basic operation of Plasma Display

- 1. After turning on power switch, power board sends 5Vst-by Volt to Micro Processor**
- 2. The micro Processor memorize the last state of Power, When the last state of power is on or receive power on signal from local Key or Remote control, Micro Processor will send on control signal to power. Then Power sends (5Vsc, 9Vsc, 24V and RLYON, Vs ON) to PCBs working. This time VIF will send signals to display Image, OSD on the panel and start to search available signal sources. If the audio signals input, them will be amplified by Audio AMP and transmitted to Speakers.**
- 3. If some abnormal signals are detected (for example: over volts, over current, over temperature and under volts), the system will be shut down by Power off.**

Main IC Specifications

- PW181 Image Processor, Scaler**
- PW1231 Digital Video Signal Processor**
- uPD64083 Three –Dimensional Y/C Separation LSI
With On-Chip Memory**
- AD9883A 110MSPS/140MSPS Analog Interface**
- VPC 323XD Comb-filter Video Processor**
- Si161B Panel Link Receiver**
- Z86229 NTSC Line 21 CCD decorder**
- MSP34x0G Multistandard Sound Processor**

PW181

Product Specification



General Description

The PW181 ImageProcessor is a highly integrated “system-on-a-chip” that interfaces computer graphics and video inputs in virtually any format to a fixed-frequency flat panel display.

Computer and video images from NTSC/PAL to WUXGA at virtually any refresh rate can be resized to fit on a fixed-frequency target display device with any resolution up to WUXGA. Video data from 4:3 aspect ratio NTSC or PAL and 16:9 aspect ratio HDTV or SDTV is supported. Multi-region, nonlinear scaling allows these inputs to be resized optimally for the native resolution of the display.

Advanced scaling techniques are supported, such as format conversion using multiple programmable regions. Three independent image scalers coupled with frame locking circuitry and dual programmable color lookup tables create sharp images in multiple windows, without user intervention.

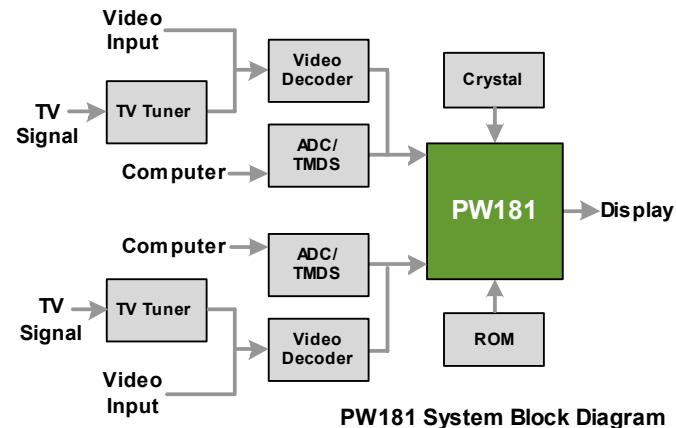
Embedded SDRAM frame buffers and memory controllers perform frame rate conversion and enhanced video processing completely on-chip. A separate memory is dedicated to storage of on-screen display images and CPU general purpose use.

Advanced video processing techniques are supported using the internal frame buffer, including motion adaptive, temporal deinterlacing with film mode detection. When used in combination with the new third-generation scaler, this advanced video processing technology delivers the highest quality video for advanced displays.

Both input ports support integrated DVI 1.0 content protection using standard DVI receivers.

A new advanced OSD Generator with more colors and larger sizes supports more demanding OSD applications, such as on-screen programming guides. When coupled with the new, faster, integrated microprocessor, this OSD Generator supports advanced OSD animation techniques.

Programmable features include the user interface, custom start-up screen, all automatic imaging features, and special screen effects.



Features

- Third-generation, two-dimensional filtering techniques
- Third-generation, advanced scaling techniques
- Second-generation Automatic Image Optimization
- Frame rate conversion
- Video processing
- On-Screen Display (OSD)
- On-chip microprocessor
- JTAG debugger and boundary scan
- Picture-in-picture (PIP)
- Multi-region, non-linear scaling
- Hardware 2-wire serial bus support

Applications

- Multimedia Displays
- Plasma Displays
- Digital Television

Device	Application	Package
PW181-10V	Up to XGA Displays	352 PBGA
PW181-20V	Up to UXGA Displays	



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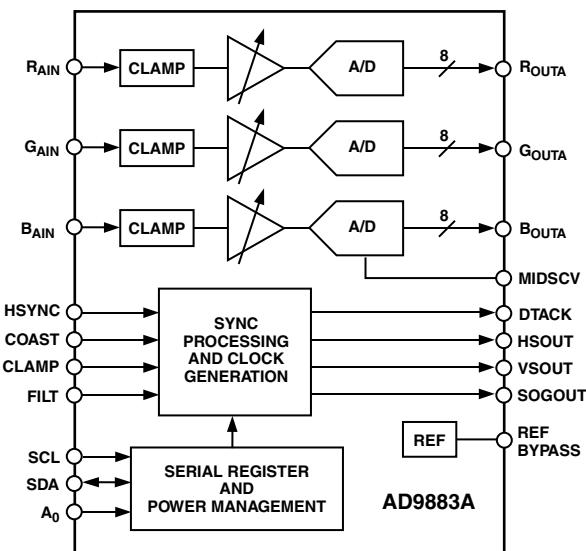
FEATURES

- 140 MSPS Maximum Conversion Rate
- 300 MHz Analog Bandwidth
- 0.5 V to 1.0 V Analog Input Range
- 500 ps p-p PLL Clock Jitter at 110 MSPS
- 3.3 V Power Supply
- Full Sync Processing
- Sync Detect for “Hot Plugging”
- Midscale Clamping
- Power-Down Mode
- Low Power: 500 mW Typical
- 4:2:2 Output Format Mode

APPLICATIONS

- RGB Graphics Processing
- LCD Monitors and Projectors
- Plasma Display Panels
- Scan Converters
- Microdisplays
- Digital TV

FUNCTIONAL BLOCK DIAGRAM



GENERAL DESCRIPTION

The AD9883A is a complete 8-bit, 140 MSPS monolithic analog interface optimized for capturing RGB graphics signals from personal computers and workstations. Its 140 MSPS encode rate capability and full power analog bandwidth of 300 MHz supports resolutions up to SXGA (1280 × 1024 at 75 Hz).

The AD9883A includes a 140 MHz triple ADC with internal 1.25 V reference, a PLL, and programmable gain, offset, and clamp control. The user provides only a 3.3 V power supply, analog input, and Hsync and COAST signals. Three-state CMOS outputs may be powered from 2.5 V to 3.3 V.

The AD9883A's on-chip PLL generates a pixel clock from the Hsync input. Pixel clock output frequencies range from 12 MHz to

140 MHz. PLL clock jitter is 500 ps p-p typical at 140 MSPS. When the COAST signal is presented, the PLL maintains its output frequency in the absence of Hsync. A sampling phase adjustment is provided. Data, Hsync, and clock output phase relationships are maintained. The AD9883A also offers full sync processing for composite sync and sync-on-green applications.

A clamp signal is generated internally or may be provided by the user through the CLAMP input pin. This interface is fully programmable via a 2-wire serial interface.

Fabricated in an advanced CMOS process, the AD9883A is provided in a space-saving 80-lead LQFP surface-mount plastic package and is specified over the 0°C to 70°C temperature range.

REV. A

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Fax: _____

PW1231A

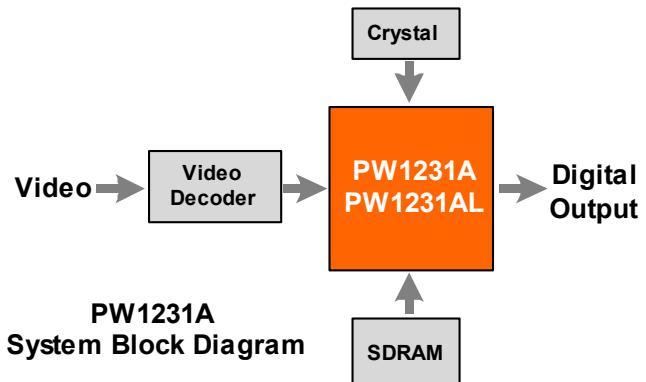
Product Specification



General

The PW1231A is a high-quality, digital video signal processor that incorporates Pixelworks' patented deinterlacing, scaling, and video enhancement algorithms. The PW1231A accepts industry-standard video formats and resolutions, and converts the input into many desired output formats. The highly efficient video algorithms result in excellent quality video.

The PW1231A combines many functions into a single device, including a memory controller, auto-configuration, and others. This high level of integration enables simple, flexible, cost-effective solutions that require fewer components.



Features

- Built-In Memory Controller
- Motion-Adaptive Deinterlace Processor
- Intelligent Edge Deinterlacing
- Digital Color/Luminance Transient Improvement (DCTI/DLTI)
- Interlaced Video Input Options, including NTSC and PAL
- Independent horizontal and vertical scaling
- Copy Protection
- Two-Wire Serial Interface

Applications: For use with Digital Displays

- Flat-Panel (LCD, DLP) TVs
- Rear Projection TVs
- Plasma Displays
- LCD Multimedia Monitors
- Multimedia Projectors

Device	Application	Package
PW1231A PW1231AL	Up to XGA	160-pin PQF

NOTE: "L" denotes lead (Pb) free

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P/N 001-0097-00 Rev B
July 2003

PRELIMINARY—CONFIDENTIAL

THREE-DIMENSIONAL Y/C SEPARATION LSI WITH ON-CHIP MEMORY**DESCRIPTION**

The μ PD64083 realizes a high precision Y/C separation and a noise reduction by the three-dimension signal processing for NTSC signal.

This product has the On-chip 4-Mbit memory for flame delay, 2ch of high precision internal 10-bit A/D converter, and adapting 10-bit signal processing (only for luminance signal) and high picture quality. The μ PD64083 is completely single-chip system of 3D Y/C separation.

This LSI includes the Wide Clear Vision ID signal (Japanese local format) decoder and ID-1 signal decoder.

FEATURES

- On-chip 4-Mbit frame delay memory.
- 4 Operation mode (Compatible to the μ PD64082)
 - Motion adaptive 3D Y/C separation (for Composite video input)
 - Frame recursive Y/C NR (for Y/C separated video input)
 - Frame comb type YNR + 1H delayed C signal (for Y/C separated video input)
 - 2D Y/C separation + Frame recursive Y/C NR (for Composite video input)
- Embedded A/D converter (2ch), D/A converter (2ch), clock generator.
- Embedded Y coring, Vertical enhancer, Peaking filter, and Noise detector.
- Embedded WCV-ID decoder and ID-1 decoder.
- I²C bus control.
- Dual power supply of 2.5 V and 3.3 V.
 - For digital : DV_{DD} = 2.5 V
 - For analog : AV_{DD} = 2.5 V
 - For DRAM : DV_{DDRAM} = 2.5 V
 - For I/O : DV_{DDIO} = 3.3 V

ORDERING INFORMATION

Part number	Package
μ PD64083GF-3BA	100-pin plastic QFP (14 × 20)

Comb Filter Video Processor

1. Introduction

The VPC 323xD is a high-quality, single-chip video front-end, which is targeted for 4:3 and 16:9, 50/60-Hz and 100/120 Hz TV sets. It can be combined with other members of the DIGIT3000 IC family (such as DDP 331x) and/or it can be used with 3rd-party products.

The main features of the VPC 323xD are

- high-performance adaptive 4H comb filter Y/C separator with adjustable vertical peaking
- multi-standard color decoder PAL/NTSC/SECAM including all substandards
- four CVBS, one S-VHS input, one CVBS output
- two RGB/YCrCb component inputs, one Fast Blank (FB) input
- integrated high-quality A/D converters and associated clamp and AGC circuits
- multi-standard sync processing
- linear horizontal scaling (0.25 ... 4), as well as non-linear horizontal scaling 'Panoramavision'
- PAL+ preprocessing
- line-locked clock, data and sync, or 656-output interface

- peaking, contrast, brightness, color saturation and tint for RGB/YCrCb and CVBS/S-VHS
- high-quality soft mixer controlled by Fast Blank
- PIP processing for four picture sizes ($\frac{1}{4}$, $\frac{1}{9}$, $\frac{1}{16}$, or $\frac{1}{36}$ of normal size) with 8-bit resolution
- 15 predefined PIP display configurations and expert mode (fully programmable)
- control interface for external field memory
- I²C-bus interface
- one 20.25-MHz crystal, few external components
- 80-pin PQFP package

1.1. System Architecture

Fig.1-1 shows the block diagram of the video processor

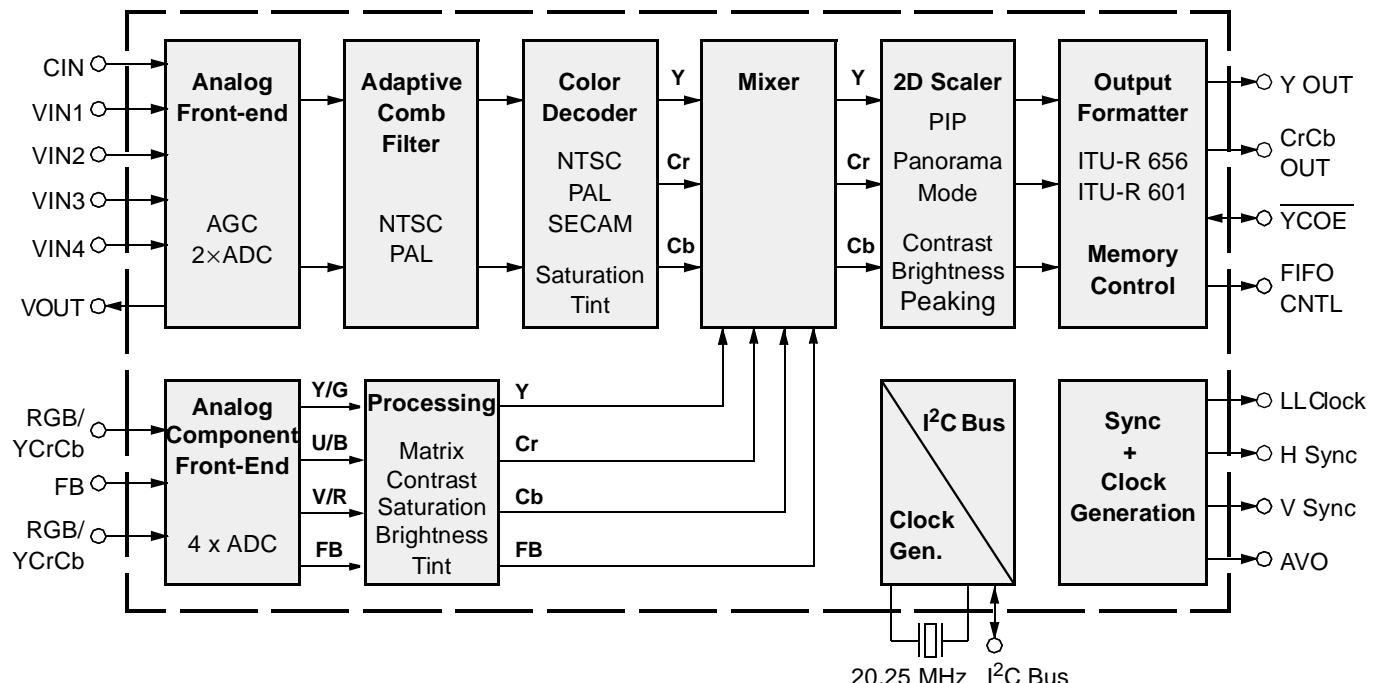


Fig. 1-1: Block diagram of the VPC 323xD

General Description

The SiI 161B receiver uses PanelLink Digital technology to support high-resolution displays up to UXGA (25-165MHz). This receiver supports up to true color panels (24 bits per pixel, 16M colors) with both one and two pixels per clock.

All PanelLink products are designed on a scalable CMOS architecture, ensuring support for future performance enhancements while maintaining the same logical interface. System designers can be assured that the interface will be stable through a number of technology and performance generations.

PanelLink Digital technology simplifies PC and display interface design by resolving many of the system level issues associated with high-speed mixed signal design, providing the system designer with a digital interface solution that is quicker to market and lower in cost.

Features

- Low Power Operation: 280mA max. current consumption at 3.3V core operation
- Time staggered data output for reduced ground bounce and lower EMI
- Sync Detect feature for Plug & Display
- Cable Distance Support: over 5m with twisted-pair, fiber-optics ready
- ESD tolerant to 5kV (HBM on all pins)
- Compliant with DVI 1.0 (DVI is backwards compatible with VESA® P&D™, FPDI-2™ and DFP)
- HSYNC de-jitter circuitry enables stable operation even when HSYNC contains jitter
- Low power standby mode
- Automatic entry into standby mode with clock detect circuitry
- Standard and Pb-free packages (see page 25).



Totally Logical

Z86229

NTSC LINE 21 CCD DECODER

FEATURES

Devices	Speed (MHz)	Pin Count/ Package Types	Standard Temp. Range	Automatic Data Extraction		
				On-Screen Display & Closed Captioning	Program Rating	Time of Day
Z86229	12	18-Pin DIP, SOIC	0°C to + 70°C	Yes	Yes	Yes

- Complete Stand-Alone Line 21 Decoder for Closed-Captioned and Extended Data Services (XDS)
- Preprogrammed to Provide Full Compliance with EIA-608 Specifications for Extended Data Services
- Automatic Extraction and Serial Output of Special XDS Packets (Time of Day, Local Time Zone, and Program Blocking)
- Programmable XDS Filter for a Specific XDS Packet
- Cost-Effective Solution for NTSC Violence Blocking inside Picture-in-Picture (PiP) Windows

- Minimal Communications and Control Overhead Provide Simple Implementation of Violence Blocking, Closed Captioning, and Auto Clock Set Features
- Programmable, On-Screen Display (OSD) for Creating Full Screen OSD or Captions inside a Picture-in-Picture (PiP) Window
- User-Programmable Horizontal Display Position for easy OSD Centering and Adjustment
- I²C Serial Data and Control Communication
- Supports 2 Selectable I²C Addresses

GENERAL DESCRIPTION

Capable of processing Vertical Blanking Interval (VBI) data from both fields of the video frame in data, the Z86229 Line 21 Decoder offers a feature-rich solution for any television or set-top application. The robust nature of the Z86229 helps the device conform to the transmission format defined in the Television Decoder Circuits Act of 1990, and in accordance with the Electronics Industry Association specification 608 (EIA-608).

The Line 21 data stream can consist of data from several data channels multiplexed together. Field 1 consists of four data channels: two Captions and two Texts. Field 2 consists of five additional data channels: two Captions, two Texts, and Extended Data Services (XDS). The XDS data structure is

defined in EIA-608. The Z86229 can recover and display data transmitted on any of these nine data channels.

The Z86229 can recover and output to a host processor via the I²C serial bus. The recovered XDS data packet is further defined in the EIA-608 specification. The on-chip XDS filters in the Z86229 are fully programmable, enabling recovery of only those XDS data packets selected by the user. This functionality allows the device to extract the required XDS information with proper XDS filter setup for compatibility in a variety of TVs, VCRs, and Set-Top boxes.

In addition, the Z86229 is ideally suited to monitor Line 21 video displayed in a PiP window for violence blocking, CCD, and other XDS data services. A block diagram of the Z86229 is illustrated in Figure 1.

Multistandard Sound Processor Family

Release Note: Revision bars indicate significant changes to the previous edition. The hardware and software description in this document is valid for the MSP 34x0G version B8 and following versions.

1. Introduction

The MSP 34x0G family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure 1-1 shows a simplified functional block diagram of the MSP 34x0G.

This new generation of TV sound processing ICs now includes versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, Micronas Noise Reduction (MNR) is performed alignment free.

Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J. The MSP 34x0G has optimum stereo performance without any adjustments.

All MSP 34xxG versions are pin compatible to the MSP 34xxD. Only minor modifications are necessary to adapt a MSP 34xxD controlling software to the MSP 34xxG. The MSP 34x0G further simplifies controlling software. Standard selection requires a single I²C transmission only.

The MSP 34x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I²C interaction is necessary (Automatic Sound Selection).

The MSP 34x0G can handle very high FM deviations even in conjunction with NICAM processing. This is especially important for the introduction of NICAM in China.

The ICs are produced in submicron CMOS technology. The MSP 34x0G is available in the following packages: PLCC68 (not intended for new design), PSDIP64, PSDIP52, PQFP80, and PLQFP64.

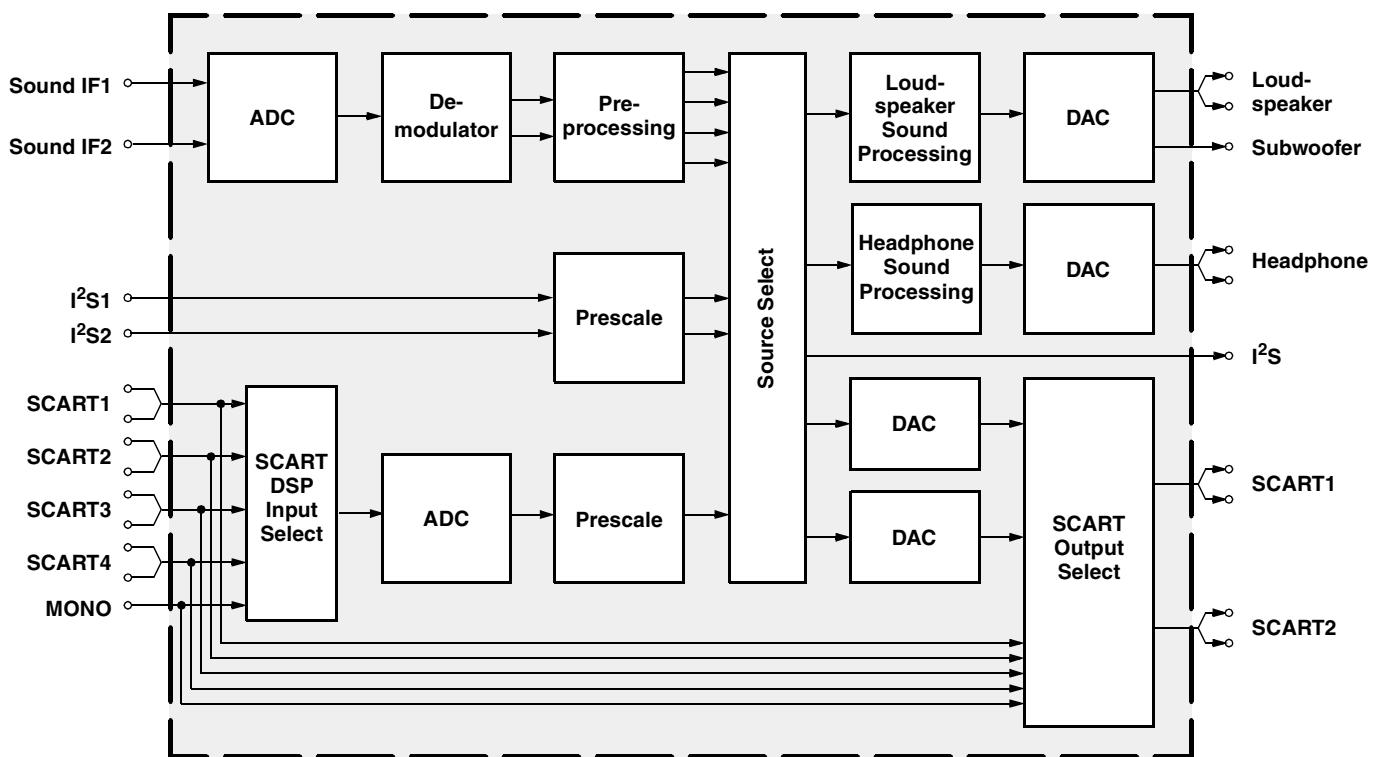


Fig. 1-1: Simplified functional block diagram of the MSP 34x0G

SAFETY PRECAUTIONS

PDP Module is a display device to be divided into a Panel part and a Drive part. The Panel part consists of Electrodes, Phosphor, various dielectrics and gas, and the Drive part includes electronic circuitry and PCB. When using/handling this PDP Module, pay attention to the below warning and cautions.

⚠ Warning?

Indicates a hazard that may lead to death or injury if the warning is ignored and the product is handled incorrectly.

⚠ Caution?

Indicates a hazard that can lead to injury or damage to property if the caution is ignored and the product is handled incorrectly.

I . WARNING

- (1) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.
- (2) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it.
Do not install or use the product in a location that does not satisfy the specified environmental conditions. This may damage the product and may cause a fire.
- (3) If a foreign substance (such as water, metal, or liquid) gets inside the product, immediately turn off the power.
Continuing to use the product, it is may cause fire or electric shock.
- (4) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power.
Continuing to use the product, it may cause fire or electric shock.
- (5) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off.
Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.
- (6) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.
- (7) Do not damage or modify the power cable. It may cause fire or electric shock.

- (8) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.
- (9) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.
- (10) PDP Module uses a high voltage (Max.450V dc). Keep the cautions concerning electric shock and do not touch the Device circuitry when handling the PDP Unit. And because the capacitor of the Device circuitry may remain charged at the moment of Power OFF, standing by for 1 minute is required in order to touch the Device circuitry.

II . CAUTIONS

- (1) Do not place this product in a location that is subject to heavy vibration, or on an unstable surface such as an inclined surface. The product may fall off or fall over, causing injuries.
- (2) Before disconnecting cable from the product, be sure to turn off the power. Be sure to hold the connector when disconnecting cables. Pulling a cable with excessive force may cause the core of the cable to be exposed or break the cable, and this can lead to fire or electric shock.
- (3) This product should be moved by two or more persons. If one person attempts to carry this product alone, he/she may be injured.
- (4) This product contains glass. The glass may break, causing injuries, if shock, vibration, heat, or distortion is applied to the product.
- (5) The temperature of the glass of the display may rise to 80°C or more depending on the conditions of use.
If you touch the glass inadvertently, you may be burned.
- (6) If glass surface of the display breaks or is scratched, do not touch the broken pieces or the scratches with bare hands. You may be injured.
- (7) PDP Module requires to be handled with care not to be touched with metal or hard materials, and must not be stressed by heat or mechanical impact.
- (8) There are some exposed components on the rear panel of this product. Touching these components may cause an electric shock.
- (9) When moving the product, be sure to turn off the power and disconnect all the cables. While moving the product, watch your step. The product may be dropped or fall, leading to injuries of electric shock.

(10) In order to protect static electricity due to C-MOS circuitry of the Drive part, wear a wrist band to protect static electricity when handling.

(11) If cleaning the Panel, wipe it with a soft cloth moistened with water or a neutral detergent and squeezed, being careful not to touch the connector part of the Panel. And don't use chemical materials like thinner or benzene.

(12) If this product is used as a display board to display a static image, "image sticking" occurs. This means that the luminance of areas of the display that remain lit for a long time drops compared with luminance of areas that are lit for a shorter time, causing uneven luminance across the display. The degree to which this occurs is in proportion to the luminance at which the display is used. To prevent this phenomenon, therefore, avoid static images as much as possible and design your system so that it is used at a low luminance, by reducing signal level difference between bright area and less bright area through signal processing.

(13) Because PDP Module emits heat from the Glass Panel part and the Drive circuitry, the environmental temperature must not be over 40°C. The temperature of the Glass Panel part is especially high owing to heat from internal Drive circuitry. And because the PDP Module is driven by high voltage, it must avoid conductive materials.

(14) If inserting components or circuit board in order to repair, be sure to fix a lead line to the connector before soldering.

(15) If inserting high-power resistor(metal-oxide film resistor or metal film resistor) in order to repair, insert it as 10mm away as from a board.

(16) During repairs, high voltage or high temperature components must be put away from a lead line.

(17) This is a Cold Chassis but you had better use a cold transformer for safety during repairs. If repairing electricity source part, you must use the cold transformer.

(18) Do not place an object on the glass surface of the display. The glass may break or be scratched.

(19) This product may be damaged if it is subject to excessive stresses (such as excessive voltage, current, or temperature). The absolute maximum ratings specify the limits of these stresses.

(20) The recommended operating conditions are conditions in which the normal operation of this product is guaranteed. All the rated values of the electrical specifications are guaranteed within these conditions. Always use the product within the range of the recommended operating conditions. Otherwise, the reliability of the product may be degraded.

(21) This product has a glass display surface. Design your system so that excessive shock and load are not applied to the glass. Exercise care that the vent at the corner of the glass panel is not damaged. If the glass panel or vent is damaged, the product is inoperable.

(22) Do not cover or wrap the product with a cloth or other covering while power is supplied to the product.

(23) Before turning on power to the product, check the wiring of the product and confirm that the supply voltage is within the rated voltage range. If the wiring is wrong or if a voltage outside the rated range is applied, the product may malfunction or be damaged.

(24) Do not store this product in a location where temperature and humidity are high. This may cause the product to malfunction. Because this product uses a discharge phenomenon, it may take time to light (operation may be delayed) when the product is used after it has been stored for a long time. In this case, it is recommended to light all cells for about 2 hours (aging).

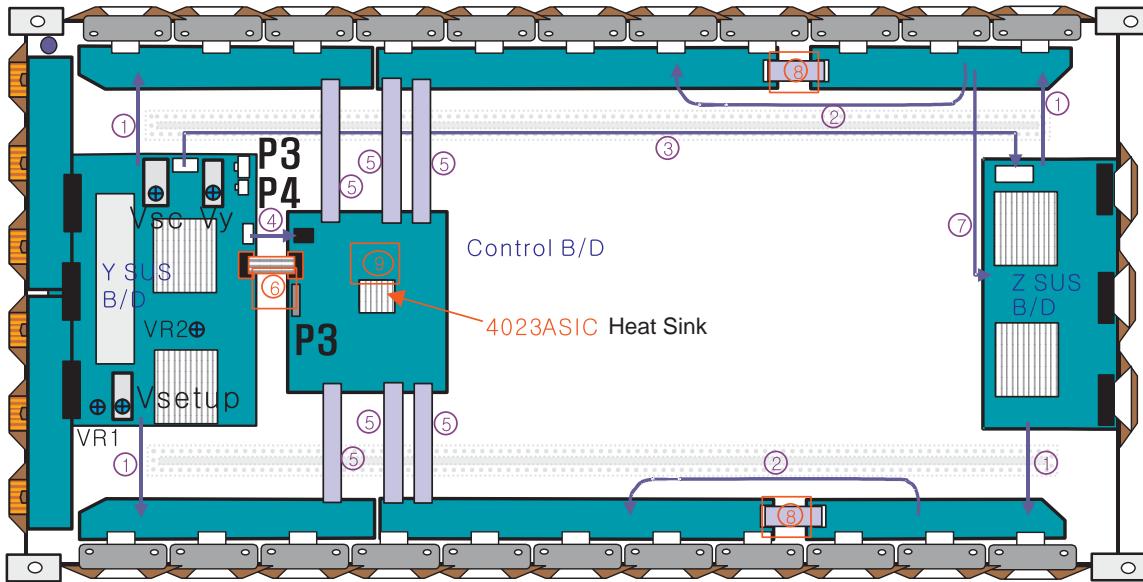
(25) This product is made from various materials such as glass, metal, and plastic. When discarding it, be sure to contact a professional waste disposal operator.

(26) If faults occur due to arbitrary modification or disassembly, LG Electronics is not responsible for function, quality or other items.

(27) Use of the product with a combination of parameters, conditions, or logic not specified in the specifications of this product is not guaranteed. If intending to use the product in such a way, be sure to consult LGE in advance.

(28) Within the warranty period, general faults that occur due to defects in components such as ICs will be rectified by LGE without charge. However, IMAGE STICKING due to misapplying the above (12) provision is not included in the warranty. Repairs due to the other faults may be charged for depending on responsibility for the faults.

Formation and Specification of Module



No	Connector	Input Signal
1	P3[Y SUS B/D]	Va, Vs
2	P4[Y SUS B/D]	5V
3	P3[CTRL B/D]	Video Signal

Power cable ass'y
 Signal cable ass'y

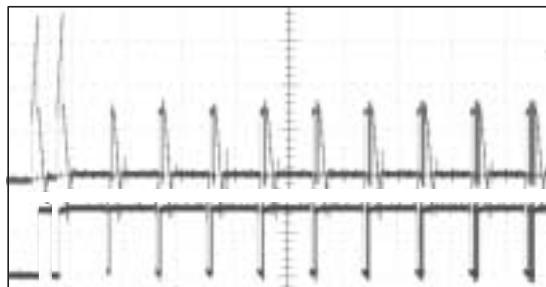
No	Name	BOARD	P/N	Description	Quantity
1	Connector Ass'y	Z-XR, Y-XL	6631Q15001A	1.5mm 5-pin, 130mm	4
2	Connector Ass'y	XR-XC	6631Q15001B	1.5mm 5-pin, 330mm	2
3	Connector Ass'y	Y-Z	6631Q25027B	2.5mm 12-pin, 900mm	1
4	Connector Ass'y	Y-Ctrl	6631Q25029A	2.5mm 8-pin, 170mm	1
5	CABLE, FLAT	Ctrl-XL, XC	6850QX0013C	0.5mm 60-pin, 210mm, non-shield type	6
6	CABLE, FLAT	Ctrl-Y	6850QV0001A	1.0mm 30-pin, 70mm	1
7	Connector Ass'y	XR-Z	6631Q12005C	1.25mm 12-pin, 320mm	1
8	CABLE, FLAT	XC-XR	6850QX0012A	0.5mm 60-pin, 40mm	2
9	Heat Sink	4023 ASIC	4920Q30001A	heat sink for 4023 ASIC	1
10	Bare PCB	CTRL B/D	6870QCC011B	Ass'y P/N: 6871QCH045A	1
		CTRL B/D	6870QCC010A	Ass'y P/N: 6871QCH044A for 50X2##7#	1
		Y SUS B/D	6870QYC002B	Ass'y P/N: 6871QYH032B	1
		Y SUS B/D	6870QYC003A	Ass'y P/N: 6871QYH038A for 50X2##7#	1
		Y DRV Top B/D	6870QDC003A	Ass'y P/N: 6871QDH080A	1
		Y DRV Bottom B/D	6870QFC003A	Ass'y P/N: 6871QDH081A	1
		Z SUS B/D	6870QZC002A	Ass'y P/N: 6871QZH036B	1
		Z SUS B/D	6870QZC003A	Ass'y P/N: 6871QZH043A for 50X2##7#	1
		X LT B/D	6870QLC006A	Ass'y P/N: 6871QLH035C	1
		X RT B/D	6870QRC006A	Ass'y P/N: 6871QRH041C	1
		X CT B/D	6870QXC008A	Ass'y P/N: 6871QXH024C	1
		X CB B/D	6870QXC009A	Ass'y P/N: 6871QXH025C	1
		X LB B/D	6870QLC007A	Ass'y P/N: 6871QLH036C	1
		X RB B/D	6870QRC007A	Ass'y P/N: 6871QRH042C	1

Trouble Shooting

1. Checking for no Picture

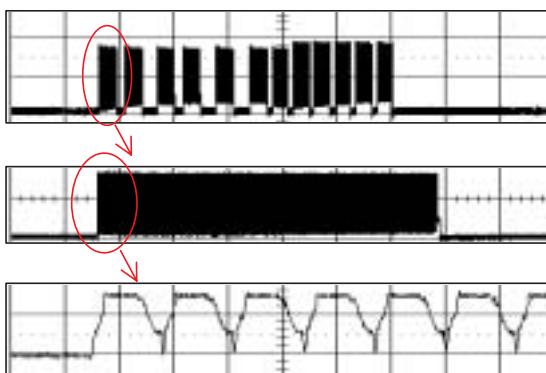
A screen doesn't display at all and condition of black pattern or power off.

- (1) Check whether the CTRL B/D LED(D2) is turned on or not.
- (2) Check the power and signal cable of CTRL B/D.
- (3) Check the power connection of X B/D, Y B/D and Z B/D.
- (4) Check the connection of X B/D, Y B/D and Z B/D to CTRL B/D.
- (5) After measure the output wave of X, Y and Z B/D, find the trouble of B/D by comparing with below figure and replace.
 - Measure Point fo Y B/D : TP (Bead B41)
 - Measure Point fo Z B/D : TP ((Bead B11)
 - Measure Point fo X B/D : COF TP
- (6) Check the SCAN IC.
- (7) Check the DATA COF.
- (8) Replace the CTRL B/D.



<Y B/D Output wave - 1FRAME>

<Z B/D Output wave - 1FRAME>



<COF Output wave - 1FRAME>

<COF Output wave - 1SF>

<COF Output wave - Enlargement>

2. Hitch Diagnosis Following Display Condition

2-1. 3/11 or 4/11 of the screen doesn't be shown

- (1) Confirm the power connector of X B/D is well plugged in which is correspond to not showing screen.
- (2) Confirm the connector that is connected between CTRL B/D and X B/D correspond to not showing part.
- (3) Replace relevant X B/D.

* Relationship between screen and X B/D

Screen	X B/D
Top Left of the Screen	3/11 <--> X Right Top B/D
Top Center of the Screen	4/11 <--> X Center Top B/D
Top Right of the Screen	4/11 <--> X Left Top B/D
Bottom Left of the Screen	3/11 <--> X Right Btm B/D
Bottom Center of the Screen	4/11 <--> X Center Btm B/D
Bottom Right of the Screen	4/11 <--> X Left Btm B/D

* Screen Display Form



i) Top of the Screen
(4/11 or 3/11)

ii) Bottom of the Screen
(4/11 or 3/11)



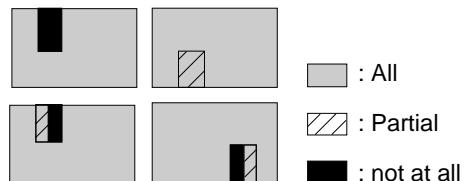
2-2. The screen doesn't be shown as Data COF

(Include not be shown part of Data COF quantity or a part)

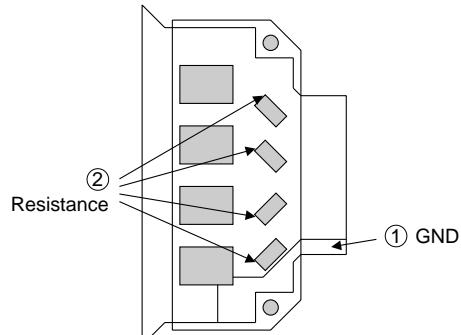
- (1) The problem between Data COF and X B/D is more possible that the screen is not be shown as data COF.
- (2) Confirm the connector of Data COF is well connected to X B/D. Correspond to the part that screen is not showing
- (3) Confirm whether the Data COF is failed and replace X B/D

* Example of the screen display form

(Anything of the 7 Data COF can be shown beside below pictures)



* How to examine Data COF IC

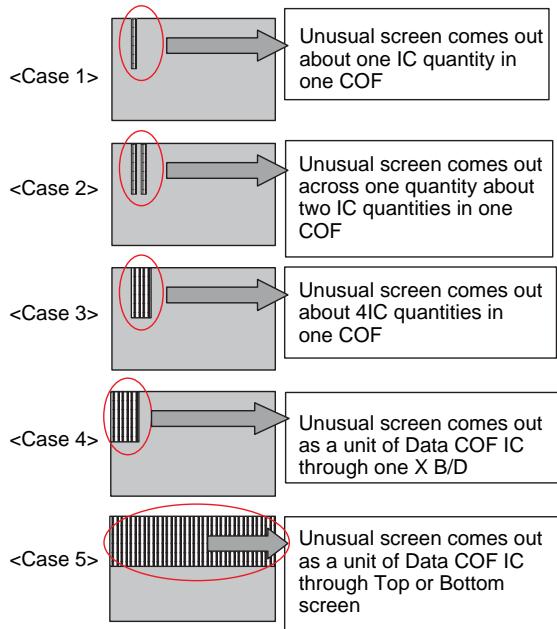


- ① ANODE Pattern (GND)
- ② CATHOD Pattern and examine the Diode to the pure or reverse direction.
- Measure the third resistance value

2-3. It Generates Unusual Pattern of Data COF IC unit

- (1) In case of generating unusual pattern of Data COF IC unit as below picture, there is problem in the check that is input into Data COF IC
- (2) In case of <case 1, 2, 3>
 - confirm the connection of Data COF connector
 - replace the relevant X B/D
- (3) In case of <case 4, 5>
 - confirm the connector that is connected from CTRL to X B/D
 - Replace relevant XB/D or CTRL B/D

* Screen Display Form



2-4. Regular Stripe is Generated about the Quantity of one Data COF IC or more

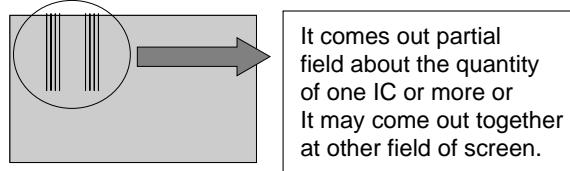
- (1) In case of generating regular stripe about the quantity of one Data COF IC, there is problem at the input of data of X B/D

In case of generating regular stripe about the quantity of two Data COF IC, that means the data which is conveyed from CTRL B/D doesn't conveyed well.
- (2) Confirm the XB/D connection connector plugged in well. Correspond to unusual screen.
- (3) Replace relevant XB/D or CTRL B/D.

* Relationship between screen and X B/D

Screen	X B/D
Top Left of the Screen	3/11 <--> X Right Top B/D
Top Center of the Screen	4/11 <--> X Center Top B/D
Top Right of the Screen	4/11 <--> X Left Top B/D
Bottom Left of the Screen	3/11 <--> X Right Btm B/D
Bottom Center of the Screen	4/11 <--> X Center Btm B/D
Bottom Right of the Screen	4/11 <--> X Left Btm B/D

* Screen Display Form



2-5. The screen display has a problem for Scan FPC.

- (1) It's may be a problem between Scan FPC and Y DRV B/D.
- (2) Check the connection of Y B/D and Scan FPC.
- (3) If the Scan IC is failed, replace the Y DRV B/D.

* Screen Display Form(1/12 of Screen)



The screen display is very good
 The screen display is a poor

* Check a method of SCAN IC

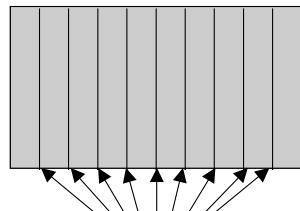


Change the Vpp Pin into ANODE and GND Pin into CATHOD and then test the Diode with forward or reverse direction.

2-6. The screen has a vertical line with regular gap. (A vertical stripe flash at especial color)

- (1) This is a problem about control B/D.
- (2) Replace Control B/D.

* Screen Display Form



The screen has a vertical line with regular gap

2-7. A data copy is happened into vertical direction

- (1) In this case, it's due to incorrect marking of scan wave.
- (2) Replace a Y DRV B/D or Y SUS B/D.

* Screen Display Form



<Display Pattern>



<Case 1 : Entire Copy>



<Case 2 : Top Copy>



<Case 3 : Bottom Copy>

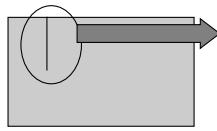


<Case 4 : Entire Copy>

2-8. The screen has one or several vertical line

- (1) In this case, It isn't a problem about controller B/D or X B/D.
- (2) It may cause followings.
 - It's out of order a panel
 - Open or short of DATA COF FPC attached panel
 - It's out of order a DATA COF attached panel
- (3) Replace Module.

* Screen Display Form



It may show several vertical lines in a quarter or other division part of screen including left case.

2- 9. The screen has one or several horizontal line

- (1) In this case, it isn't a problem about controller B/D or X B/D.
- (2) It may cause followings.
 - It's out of order a panel
 - Open or short of SCAN FPC attached panel
 - It's out of order a SCAN IC attached panel
- (3) Replace Y DRV B/D

* Screen Display Form



It may show several horizontal lines including left case.

2-10. The screen displays input signal pattern but the brightness is dark

- (1) In this case, Z B/D operation isn't complete.
- (2) Check the power cord of Z B/D.
- (3) Check the signal connector of Z B/D and Controller B/D.
- (4) Replace the Controller B/D or Z B/D.

2-11. The screen displays other color partially on full white screen or happens discharge partially on full black screen.

- (1) Check the declination of Y B/D set up, set down wave.
- (2) Check the declination of Z B/D ramp wave.
- (3) Measure each output wave with oscilloscope(more than 200MHz).

2-12. A center of screen is darker than a edge of screen at full white pattern.

- (1) In this case, Va voltage which goes over to X_Board from Z_Board seems problem, check the connector.
- (2) When no problem with shift connector, replace the Y_B/D and Z_B/D each or Y & Z_B/D simultaneously.
- (3) When not change after (1), (2) item managing, replace the PSU(Power Supply).

* Screen Display Form



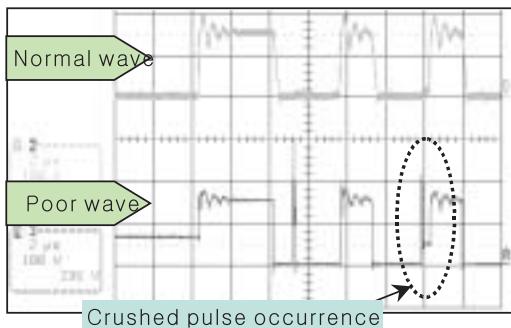
2-13. It doesn't display a specified brightness at specified color

- (1) Check the connector of CTRL B/D input signal.
- (2) Replace the CTRL B/D.

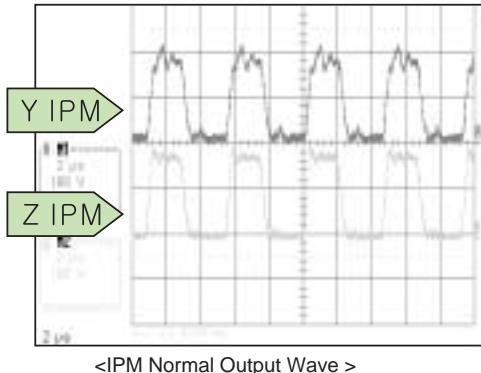
3. Checking for Component Damage

3-1. Y IPM(IC2, IC7) or Z IPM(IC9, IC11) Damage

- (1) When the internal Sustain_FET of Y IPM or Z IPM is damaged, screen doesn't be shown or electric discharge is generated.
 - Test Point: GND~B41(Y B/D), GND~B11(Z B/D)
 - Wave format: B41(Y B/D) or B11(Z B/D) has no wave output
- (2) When the internal ER_FET of Y IPM or Z IPM is damaged, Y IPM or Z IPM emission is increased.
 - Test Point: GND~B41(Y B/D), GND~B11(Z B/D)
 - Wave format: As shown (Fig. 1)



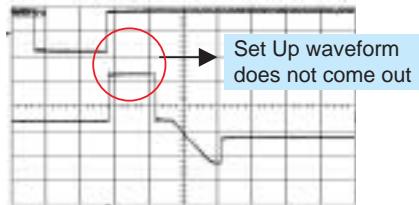
(Fig. 1) When the ER_FET is damaged



- Measurement position: Y B/D(B41), Z B/D(B11)
Sustain section enlarge(Full White Pattern)

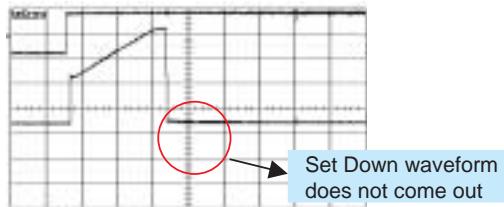
3-2. FET Ass'y(Y B/D: HS2, 5, 6) Damage

- (1) When Set_Up FET is damaged, screen doesn't be shown
 - Test Point: Enlarge the after measuring GND~B41(Y B/D)
 - Wave format: As shown (Fig. 2)

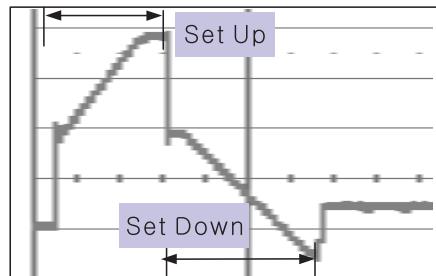


(Fig. 2) When the Set_Up FET is damaged

- (2) When Set_Down FET is damaged, electric discharge of entire screen is generated.
 - Test Point: Enlarge the after measuring GND~B41(Y B/D)
 - Wave format: As shown (Fig. 3)



(Fig. 3) When the Set_Down FET is damaged



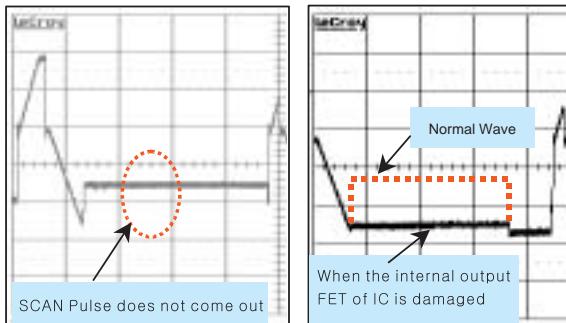
<FET Ass'y Normal Output Wave >

- Measurement position: Reset section enlargement wave of B41(Y B/D) (Full White Pattern)

3-3. SCAN IC(Y drv B/D: IC1~12) Damage

(1) In case of SCAN IC poor, one horizontal line may open at screen.

- Test Point: GND ~ Output ICT measurement of Y drive B/D
- Wave format: As shown (Fig. 4)



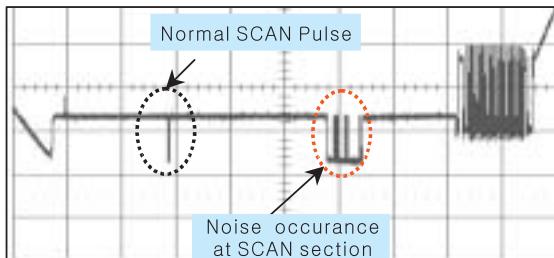
(Fig. 4) When SCAN IC is poor

(2) Screen may not shown when SCAN IC is damaged by external electricity or spark.

- Test Point: GND ~ Output ICT measurement of Y drive B/D
- Wave format: Output wave format isn't output (You can see the damage for SCAN IC)

(3) Screen shaked horizontally when Y drv B/D Top and Bottom cable is poor

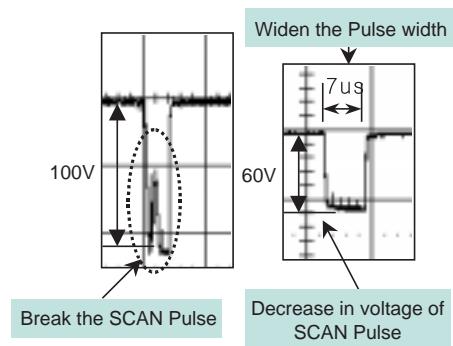
- Test Point: GND ~ Output ICT measurement of Y drive B/D
- Wave format: As shown (Fig. 5)



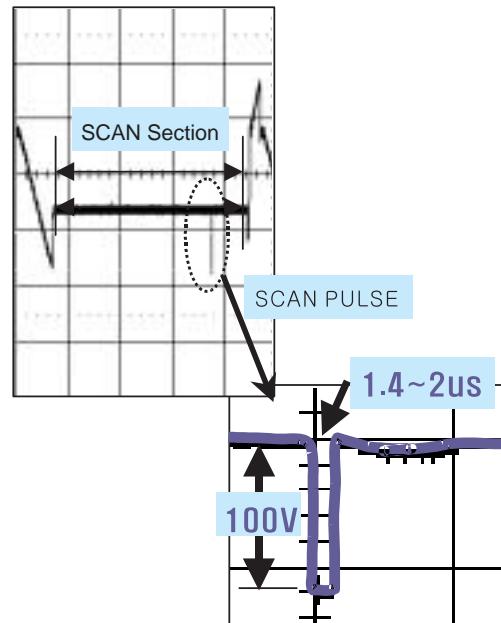
(Fig. 5) When occurance the Scan Noise

(4) In case of shorting the SCAN IC output by a dust, foreign substance, it may overlap two horizontal lines on screen.

- Test Point: GND ~ Output ICT measurement of Y drive B/D
- Wave format: As shown (Fig. 6)



(Fig. 6) When SCAN IC output is short



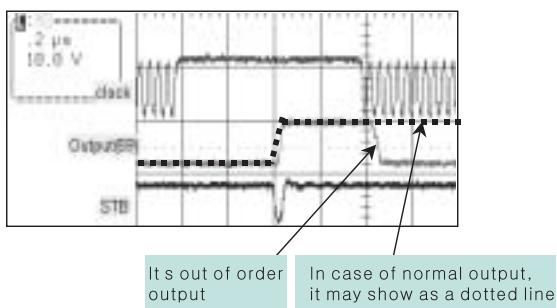
<SCAN IC Normal Output Wave >

- Measurement position: Output ICT of Y drive B/D
SCAN section enlarge (Full White Pattern)

3-4. COF Damage

(1) In case of shorting or opening the IC output of COF, it may show one or several vertical lines.

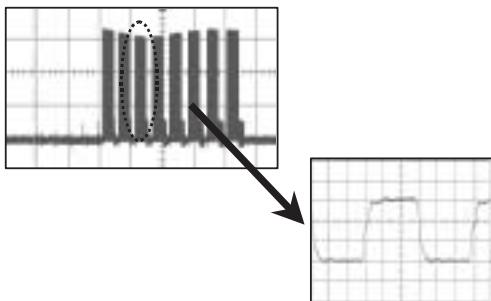
- Test Point: Enlarge the after measuring output TP of COF~GND.
- Wave format: As shown Output of (Fig. 7)
In case of normal wave output, when STB signal is generated, maintain High output. And when STB signal is generated again must be fall Low.
But when IC of COF is poor, STB signal is not generated Output falls with Low.



(Fig. 7) When IC output of COF is poor

(2) In case of being damage IC of COF or power resistance, the screen doesn't be shown or happens discharge partially.

- Test Point: Enlarge the after measuring output TP of COF~GND
- Wave format: Output wave doesn't come out



- Measurement position: Enlarge the after measuring output TP of COF (Full White Pattern)

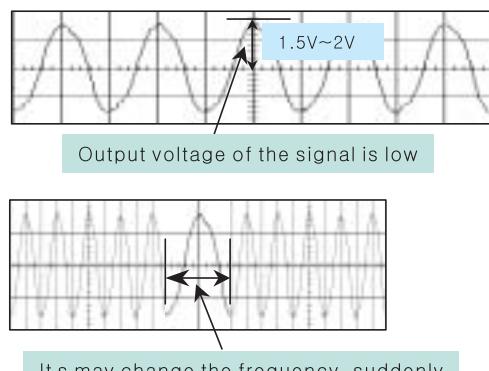
3-5. Crystal(CTRL B/D: X2) damage

(1) When Crystal is damage, the screen doesn't be shown.

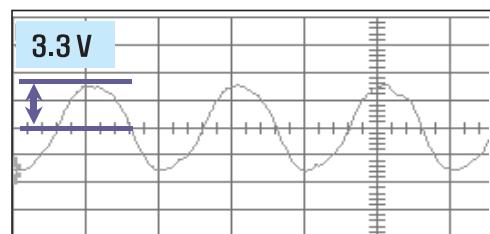
- Test Point: Measuring 3pin of GND~Crystal(Ctrl B/D: X2)
- Wave format: Output wave doesn't come out

(2) In case of unusual launch of the Crystal, it may blink the screen.

- Wave format: As shown (Fig. 8)



(Fig. 8) When Crystal is poor



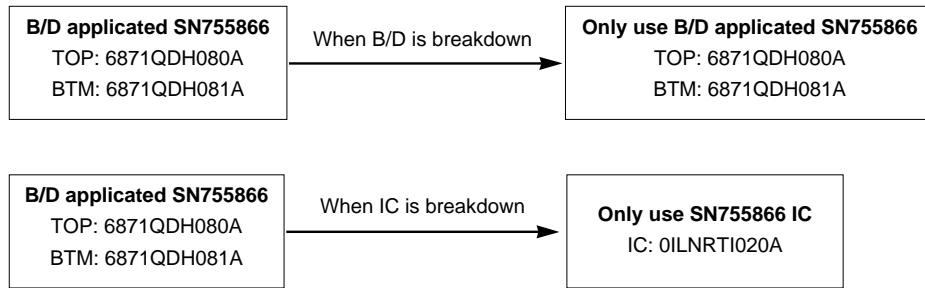
<Crystal Normal Output Wave >

- Measurement position: Measuring 3pin of Crystal(X2: 100MHz) (Full White Pattern)

4. Shift breakdown component compatibility consideration

4-1. Scan IC follows in application, compatibility of Y DRV Top, Bottom B/D

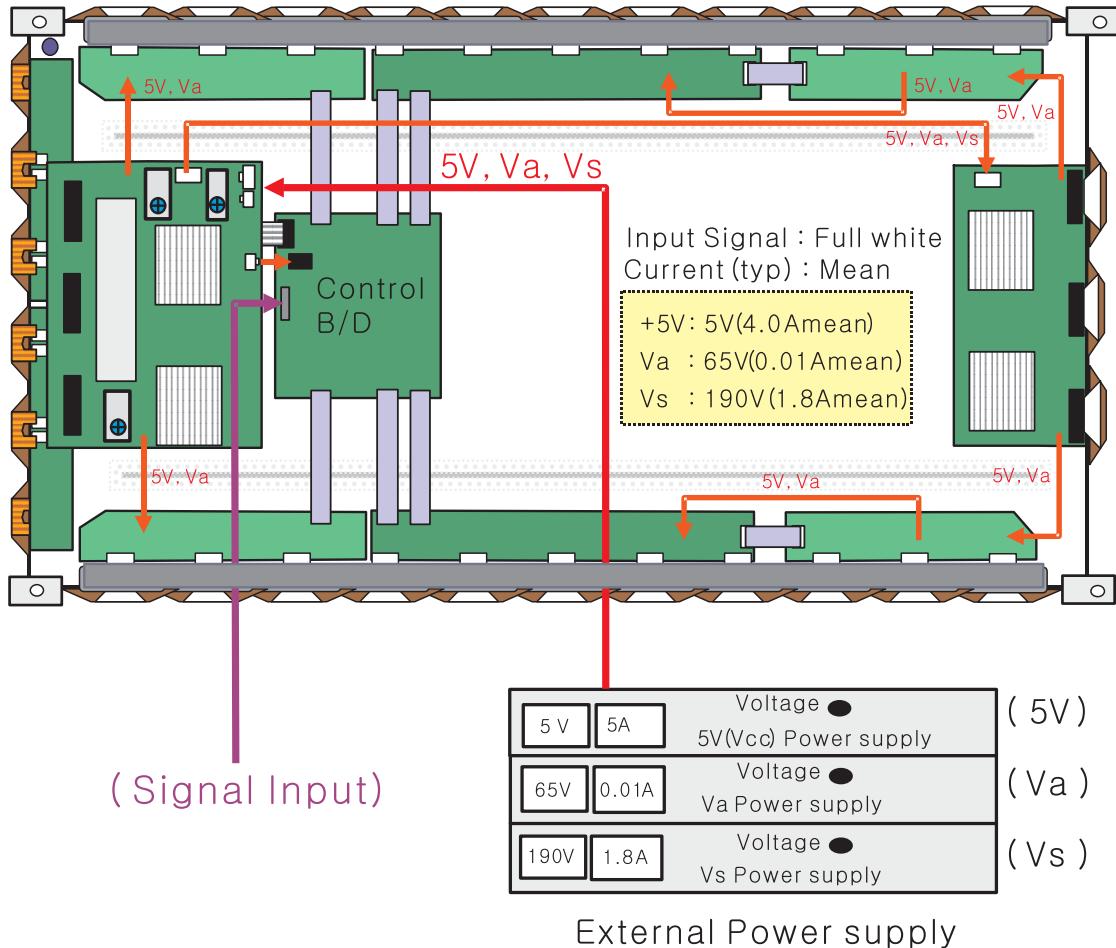
- (1) When B/D applied SN755866 is breakdown, you must mutually only replace Top B/D and Bottom B/D applied SN755866.
- (2) When IC of B/D applied SN755866 IC is breakdown, you must only replace SN755866 IC.
Different IC application being not right



* When replacing the IC, notice
To prevent dust, fix the same IC after removing the silicon
and then it again stick the IC.

Silicon Part No.: 7254Q00002A(Tube Type)
7254Q00002B(Can Type)

Block Diagram



SPARE PART LIST

50" PDP (WXGA) 100V/60HZ USA

Item	Component	Description/Country Origin	Unit	Quantity Summary
一. ELECT PART				
1	E2301-559001	IC TDA8946J AUDIO AMPLIFIER	PCS	1
2	E3213-011001	SOCKET ANT F/RCA	PCS	1
3	E3403-002004	TUBE SUMITUBE D3.0 BLK 600V	M	0.04
4	E3403-004001	TUBE SUMITUBE D5.0 BLK 600V	M	0.5
5	E3413-003001	CABLE COAXIAL RCA/F FOR USA L=45	PCS	1
6	E3421-926014	WIRE ASSY P2.5 11P+10P/12P+7P+4P PD	PCS	1
7	E3421-926020	WIRE ASSY 1H2.5(AMP)-2T(8MM) L=680MM	PCS	1
8	E3421-926024	WIRE ASSY (LVDS W/EMI) L=270MM 31P (PCS	1
9	E4406-069001	FILTER EMI CTNF-100B FOR 4	PCS	1
10	E4901-001001	FAN 60X60X15MM DC9V 3500RPM	PCS	2
11	E6205-001005	DISPLAY PDP LG-WXGA 50" 50X2A	PCS	1
12	E7801-056002	PCB ASSY MAIN IVPC_DVI_CCD (E-ROOM)	PCS	1
13	E7801-056201	PCB ASSY TUNER NTSC	PCS	1
14	774P50SB01-01	POWER ASSY	PCS	1
15	771-42AF01-01	SPK JACK PCB ASSY	PCS	1
16	771-50SB03-01	IR RECEIVE PCB ASSY	PCS	1
17	771-42D105-01	KEY PCB ASSY	PCS	1
二. MECH PART				
1	244-34B811-01	GIFT BOX HANDLE 34B8	PCS	2
2	248-46D201-01	HANDLE FOR PLASMA	PCS	2
3	263-42D101-01S	POWER LENS 42D1	PCS	1
4	269-42D101-01L	REMOTE LENS 42D1	PCS	1
5	322-42P101-01	REMOTE LENS RUBBER SPACER PDP-42TP1	PCS	1
6	322-42P102-01	POWER LENS RUBBER SPACER PDP-42TP1	PCS	1
7	322-42P103-01	SEPARATE RUBBER SPACER FOR REMOTE AN	PCS	1
8	326-064510-50	SPONGE CUSHION 645X10X5.0MM W/ADHESI	PCS	2
9	326-115010-50	SPONGE CUSHION 1150X10X5.0MM W/ADHES	PCS	2
10	361-101261-01	CABLE TIE	PCS	24
11	367-42D101-01	EDGE SADDLE 14MM 42D1	PCS	4
12	379-42P102-01	FILTER RUBBER BAR B PDP-42TP1	PCS	6
13	384-42D103-04H	PVC SHEET FOR E-ROOM PCB USA	PCS	1
14	387-50AD01-01H	MODEL PLATE AKAI ENG PDP5016H H	PCS	1
15	388-42D103-01H	CAUTION PLATE ENG 42D1 H	PCS	1
16	388-42P101-01	PC SHEET FOR REMOTE PCB 42P1 94V0	PCS	1
17	388-42SB04-01H	POWER PLATE SANSUI 42SB	PCS	1
18	388-50AD01-01H	SPEAKER PLATE FOR PDP50HAD	PCS	1
19	400-50AD01-01	FRONT CABINET(AL) SANDBLAST SILVER W	PCS	1
20	402-50SB02-01S	BACK COVER FOR 50" LG	PCS	1
21	420-50SB01-01S	MAIN BRACKET FOR 50" LG	PCS	2

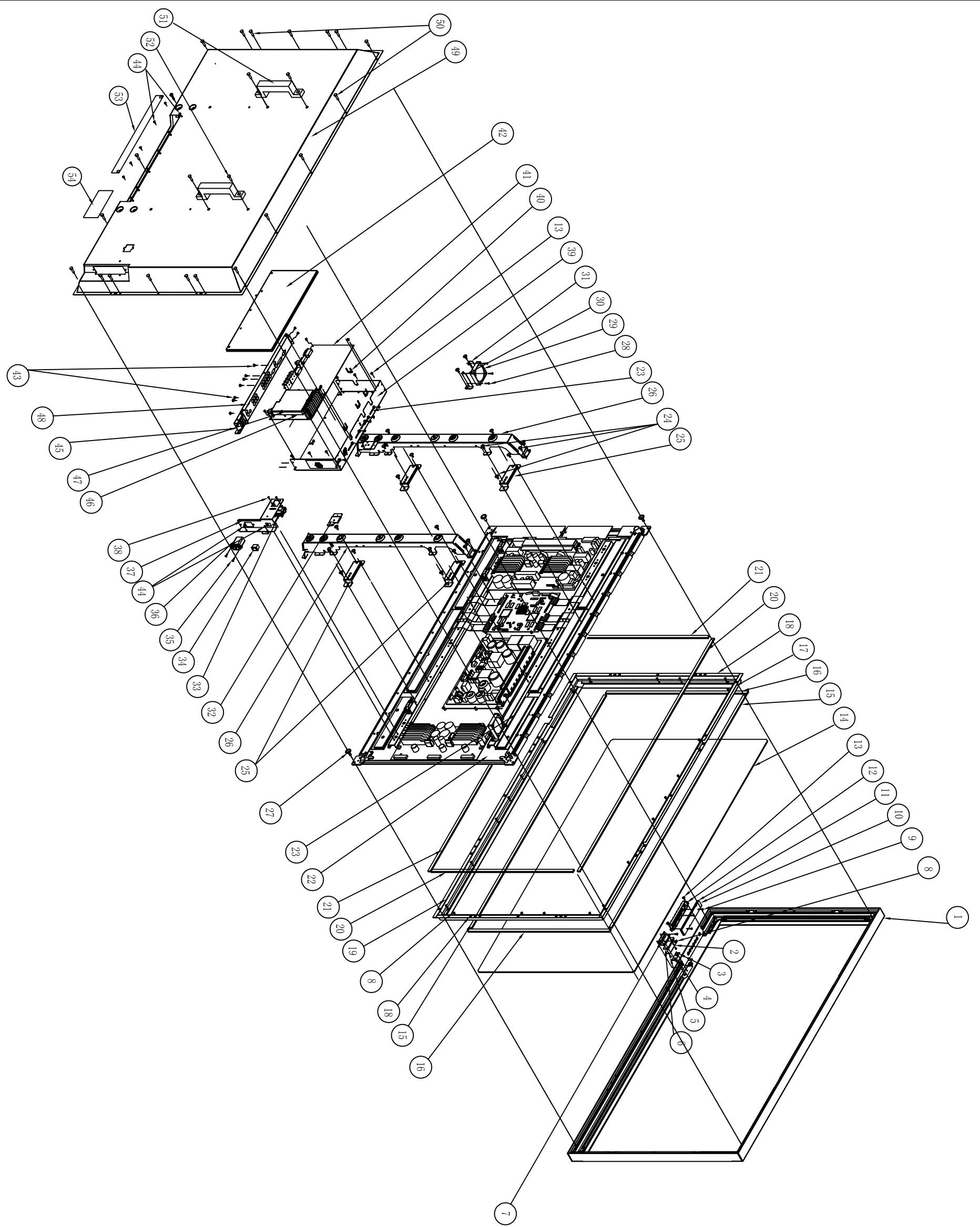
22	423-50SB01-01S	FILTER SUPPORT FOR TOP	PCS	1
23	423-50SB03-01S	FILTER SUPPORT FOR SIDE	PCS	2
24	423-50SB04-01S	FILTER SUPPORT FOR BOTTOM	PCS	1
25	426-50SB01-01S	AV2 BRACKET	PCS	1
26	426-50SB03-01S	POWER BRACKET	PCS	1
27	429-50AD07-01	REMOTE PCB BRACKET	PCS	1
28	429-50AD08-01S	SUPPORT BRACKET	PCS	1
29	429-50SB05-01S	CONNECT BRACKET	PCS	4
30	429-50SB06-01S	SHIELD BOX BRACKET	PCS	2
31	429-50SB07-01	FAN BRACKET-L	PCS	2
32	429-50SB08-01	FAN BRACKET-R	PCS	2
33	430-42D102-01	HEAT SINK FOR E-ROOM 42D1	PCS	1
34	436-42D113-01S	TERMINAL SHEET FOR E-ROOM PCB USA	PCS	1
35	457-42D101-01	CLAMP ID=4.3MM L=46MM	PCS	10
36	481-42D105-01	SHIELD BOX FOR USA RF 42D1	PCS	1
37	481-42D113-01S	SHIELD BOX FOR E-ROOM PCB	PCS	1
38	483-42D103-01	SHIELD COVER FOR E-ROOM PCB 42D1	PCS	1
39	483-42D104-01	SHIELD COVER TOP FOR 42D1	PCS	1
40	483-50SB11-01	SHIELD SHEET	PCS	1
41	486-50AD01-01	NAME PLATE AKAI SIL/BLACK 50AD	PCS	1
42	553-002509-40A	EMI SHIELD GASKET 25X9X4.0MM W/CONDU	PCS	4
43	553-005009-25A	SHIELD GASKET 50X9X2.5MM W/CONDUCTIV	PCS	2
44	553-006509-40A	SHIELD GASKET 65X9X4.0MM W/CONDUCTIV	PCS	4
45	553-015009-40A	EMI SHIELD GASKET 150X9X4.0MM W/COND	PCS	8
46	553-020009-40A	SHIELD GASKET 200X9X4.0MM W/CONDUCTI	PCS	2
47	553-024509-40A	SHIELD GASKET 245X9X4.0MM W/CONDUCTI	PCS	2
48	553-026009-40A	EMI SHIELD GASKET 260X9X4.0MM W/COND	PCS	2
49	553-028009-40A	EMI SHIELD GASKET 280X9X4.0MM W/COND	PCS	2
50	553-039509-10A	SHIELD GASKET 395X9X1.0MM W/CONDUCTI	PCS	1
51	553-067009-40A	EMI SHIELD GASKET 670X9X4.0MM W/COND	PCS	2
52	553-114009-40A	EMI SHIELD GASKET 1140X9X4.0MM W/CON	PCS	2
53	554-090030-01	SHIELD CLOTH 90X30MM W/CONDUCTIVE AD	PCS	1
54	563-119-	SERIAL NO. LABEL	PCS	1
55	568-P46T02-02	WARNING LB ENG 42SF NIL	PCS	1
56	579-42D103-02	ON/OFF LB ENG 42D1 NIL	PCS	1
57	579-42D105-01	PROTECTIVE EARTH LABEL FOR ESA 42TD1	PCS	1
58	579-50AD01-01	BAR CODE LABEL AKAI W/SERIAL NO PD5	PCS	2
59	579-50AD02-01	SERIAL NO/BAR CODE LABEL 50HA (USA)	PCS	1
60	590-50AD01-01	WARRANTY CARD ENG AKAI PDP5006H	PCS	1
61	601-305008-00	MACH. SCREW CTS 3X8 BZN +	PCS	2
62	602-305006-00	MACH. SCREW PAN-WASHER 3X6 B ZNP +H	PCS	17
63	602-305006-10	MACH. SCREW WHR 3X6 NIP +	PCS	31
64	602-407008-00	MECH. SCREW PAN-WASHER 4X8 B ZNP +H	PCS	2
65	604-305005-30	MACH. SCREW BID 3X5 BNI +	PCS	2
66	604-305008-10	MACH. SCREW BID 3X8 NIP +	PCS	2
67	604-407022-10	MECH. SCREW BINDING M4X22 W NIP +H	PCS	8
68	604-601020-00	MACHINE SCREW BINDING M6X1.0PX20MM B	PCS	6

69	60D-407010-40	MACH. SCREW W/SPRING WASHER M4.0X0.7	PCS	27
70	60D-508012-40	MACH. SCREW W/SPRING WASHER M5.0X0.8	PCS	4
71	610-300210-00	S-TAP. SCREW RND 3X10 A BZN +	PCS	2
72	614-300210-10	S-TAP. SCREW BID 3X10 A NIP +	PCS	7
73	623-401812-00	TAPING SCREW B-TYPE TRUSS 4X12 B ZNP	PCS	24
74	624-302406-10	TAP SCREW B-TYPE BINDING 3.0X6 WNC +	PCS	22
75	734-BM0304-02	SECC STAND BASE 50" W/PACKING BIG BO	SET	1
76	786-SW0411-01	AKAI WOOD SPEAKER ASSY W/POLYFOAM SI	SET	1
77	900-50SB01-01	DISPLAY FILTER 50" LG	PCS	1

III. PACKING

1	300-50P101-02C	POLYFOAM TOP 50TP1	PCS	1
2	300-50P102-02C	POLYFOAM BOTTOM 50TP1	PCS	1
3	310-111404-07V	POLYBAG 11"X14"X0.04	PCS	1
4	310-633810-02T	POLYBAG 63"X38"X1.0MM W/WARNING &REC	PCS	1
5	510-50AD01-01K	GIFT BOX AKAI ENG PD50HAD K	PCS	1
6	512-50AD01-01	SHEET	PCS	0.6364
7	512-50AD02-01	SHEET 1545X945	PCS	0.0454
8	518-50AD01-01K	BOTTOM BOX	PCS	1
9	511-42D102-01A	ACCESSORY BOX	PCS	1
10	580-50AD01-02	INSTRUCTION BOOKLET E FOR PDP50HAD-A	PCS	1
11	790-002514-A2	AKAI USA REMOTE SILVER FOR PDP5016H	PCS	1
12	E3404-157001	AC CORD UL 1.88M MET-4D7+SJT 16AWG/	PCS	1
13	E7301-011002	BATTERY AA R6P1.5V <2>	PCS	2

DWG. Rev.	ZONE	DESCRIPTION	DATE	REVISOR



DRAWN.	CHECKED	APPR'D.	TOLERANCE UNLESS OTHERWISE SPECIFIED		TITLE	EXPLODE VIEW E-ROOM
			MATL.	MODEL NO.		
			0 ~ 30	± 0.10		
			>30~100	± 0.20		
			>100	± 0.30		
			FINISH			
			3rd ANGLE PROJECTION	ANGULAR: ± 0.3		
			UNIT: mm			
					REMARK	
					ITEM PART NO.	DESCRIPTION

If you forget your V-Chip Password

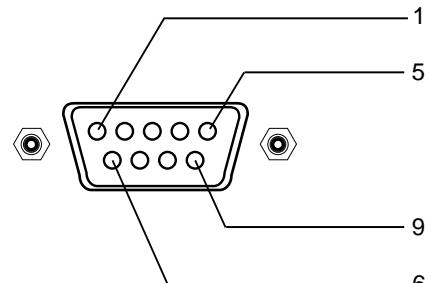
- Omnipotence V-Chip Password: **1234**.
- Press **MENU** button.
- Press **Up, Down** and **CH+, CH-** buttons to highlight "V-Chip" Control.
- Press **OK** button to pop up "INPUT PASSWORD".
- Use the Number buttons (0~9) to enter the omnipotence Password 1234.
- Press **Down** to highlight "Password change" Control.
- Press **OK** button to confirm and will pop up "Password Change" item.
- Change to your familiar Password again.

Software upgrade

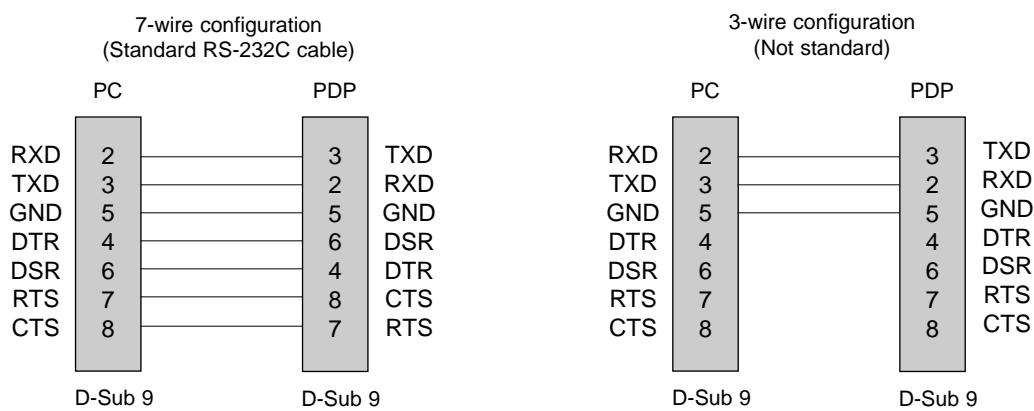
- Connect the RS-232C input jack to an external control device (such as a computer) and software upgrade.

Type of connector; D-Sub 9-pin male

No.	Pin name
1	No connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection



RS-232C configurations



Software upgrade Process

- Power Switch OFF.
- Connect the serial port of the control device to the RS-232 jack on the PDP back panel.
RS-232C connection cables are not supplied with the PDP.
- Power Switch ON. The power indicator on the front of the panel should now display red, means that the PDP is in standby mode.
- Copy the software (Flash Upgrader) to the computer.
- Open the software (Flash Upgrader.exe)
- Point "Flash" on the interface of the Flash Upgrader.exe.
- Press STANDBY button on the front panel or POWER button of Remote control, Power indicator green, the PDP is in power ON mode, software start upgrader immediately.
- Waiting for the upgrader programing, when it is finished, the PDP will auto power on.
- After the upgrader is finished, shut down the power switch, take out the RS-232C connection after the power indicator is extinguished.

Note: The computer and PDP must be keep **Power ON** in the software upgrade processing.